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THE

AMERICAN CYCLOPÆDIA.

VOL. V.

CODE—DEMOTICA.

206

THE

AMERICAN CYCLOPÆDIA:

A

Popular Dictionary

OF

GENERAL KNOWLEDGE.

EDITED BY

GEORGE RIPLEY AND CHARLES A. DANA.

WITH SUPPLEMENT.

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CODE

CODE (Lat. *codex*, manuscript, originally designating any writing, but afterward used specially for a law, or some form prescribed by law; hence *codicillus*, the diminutive of *codex*, was a supplement to a will), in jurisprudence, a compilation of laws made by public authority. In a popular sense it is understood to be a complete body of law, or if it relate to a particular subject, that it is to that extent complete; in other words, that if it be intended as a general system of laws, it supersedes all previously existing laws not embraced in it; and so of a partial code, that so far as it goes it excludes all other sources of decision. This is however erroneous. No compilation of laws was ever made which was so complete as to provide for all the cases that could arise. Positive or statute law is comparatively a small part of the laws of any country. There is always a law of custom growing out of the habits and peculiar circumstances of a people. Legislative authority may take hold of certain principles developed by custom and give to them the form of written law, but it will still be incomplete, and the deficiency must be supplied by the same process which in the first instance brought into exercise those principles which have been incorporated in the written law. A code of laws contains no inherent power of further production. Analogies may be furnished for many cases, yet even these will yield to the imperious force of changing circumstances and necessities. Other cases must incessantly occur, for the determination of which no analogy is furnished in the written law, and in these the constitution of society, from which a law of custom is continually germinating, must be the sole authority. Still more erroneous would it be to suppose that in any community a code was ever preënacted as the basis of social organization and civil rights, and that the national character was derived therefrom. The reverse of this has been the uniform course, so far as we have historic records; and it is only when these are deficient that the unsupported hypothesis has been substituted whereby a lawgiver is supposed to have moulded a whole people by his legislative enactments. There have indeed been governments, especially in eastern countries, which have had unlimited power to make and unmake laws without regard to the rights or wishes of the people; but this is only saying that a people may be subject to such a despotism as to be virtually without law except the arbitrary will of an autocrat. Under a despotical government the laws may be enforced for a time, however unacceptable to the people; yet there is a limit beyond which no sovereign can go without the danger of revolution, as when he attempts to interfere with the ancient usages of the mass of the people. The form of the government may be changed, and political rights abrogated; but customs generally prevailing in domestic life or social relations, or involving religious faith, if such customs have become venerable by their antiquity, cannot be wholly suppressed except by the entire subjugation of the people to a foreign enemy, nor even then unless by a perfectly merciless war, as when the Britons were conquered by the Anglo-Saxons. The common version as to the mode in which laws were established in the Grecian states is in great part fabulous. As to Crete we have no authentic records remaining; but as to Sparta, Thirlwall and Grote maintain that Lycurgus, to whom is commonly attributed the formation of the constitution and laws of that state, in fact introduced no new principles in either the political or social organization of the people, but merely brought into systematic arrangement the usages previously existing, with some modifications or additional provisions essential to the conservation of the peculiar form of nationality already existing, and by a public enactment with a religious sanction gave permanence to the entire system as digested by him. The double lines of kings, the *gerusia* or council of elders, the assembly of the people, even the ephors, with

less authority than they afterward acquired—all these existed before the legislation of Lycurgus; so also the distinction between Spartans and Laconians, and the still greater distinction between the former and their serfs the helots. Usages had grown up corresponding to this isolation of a small number in the midst of a numerous subject people, and it was for the carrying out more efficiently the design of these usages that Lycurgus prepared the code which thenceforth became the fixed law of Sparta. In like manner the Athenian state was harmonized by the laws of Solon, but more particularly by his constitution of political powers. The archonship, the areopagus, and the council of 400 were constituent parts of the government before his revision of the laws. The assembly of the people had also taken some part in public affairs, but in a rude, irregular manner, without any fixed authority or prescribed mode of proceeding. Solon constituted it the chief legislative body, yet with the restriction that they were to consider only what was proposed by the senate. This restriction was afterward evaded, because the assembly could modify any proposition that came before them without sending it back to the senate for approval; and again, when a law was desired by the people, any one could present it to the senate and procure the preliminary action necessary for bringing it before the people. A still greater popular power was conferred by the judicial authority given to the dicasteries, which were composed of a large number of citizens, drawn by lot, presided over by one of the archons. The number of jurors in important cases was very large, sometimes including the whole body of citizens qualified to serve. The other laws of Solon corresponded with this development of the popular element. All citizens over the age of 20 were entitled to speak and vote in the assembly, and to sit as jurors in the dicasteries; trade and manufacturing industry were encouraged, and intercourse with foreigners was promoted by giving to them greater privileges than were allowed by any other Grecian state. Still it appears that all his legislation was in consonance with the spirit of the people, and the particular laws were probably for the most part reënactments of customs already existing, but with some wholesome restraints or new provisions intended for the maintenance of the largest liberty within the proper limit of civil order.—The same principle is again exhibited in the Roman laws of the twelve tables. The account given by Livy is, that commissioners were sent into Greece to examine the laws and institutions of the principal states, and to transcribe the laws of Solon; that after their return, another commission (the decemvirs) was constituted to draw up a code of laws, the result of which was the compilation of the twelve tables. But the laws of Solon were certainly not incorporated in the code of the decemvirs, nor, so far as we are able to judge of the original from the fragments remaining and the commentaries of Roman writers, was that code transplanted from any foreign state. Acquaintance with the laws of other countries might have suggested a systematic form, perhaps have furnished some analogy for a rule in cases not otherwise provided for; but the law of the twelve tables was essentially Roman, and was undoubtedly compiled from preëxisting sources peculiar to the Roman people. As in the legislation of Solon, so in that of the decemvirs, one great object was to quiet political dissensions between the aristocracy and common people. It had been a subject of complaint by the people that the consuls, who had the whole judicial power, decided arbitrarily—not that there was no law, but no sufficient sanction to prevent perversion; and the remedy proposed was, that the laws should be made certain, and that the patrician magistrates should be compelled to conform thereto (*quo omnes uti deberent*), which it was supposed would be accomplished by having the laws written out and published. This proposition was what led ultimately to the appointment of the decemvirs, and the laws which they reported were engraved first on wood and exposed in the forum; after the destruction of the city by the Gauls they were engraved on brass, and are mentioned as still existing in public view as late as the 3d century of the Christian era. It is often said that the twelve tables constituted the basis of the Roman law for ten centuries; but this is in no proper sense well founded. Themselves founded on custom (*mores majorum*), they constituted but a fragment of the vast body of law elaborated by the energizing force of social and political elements in all the diversified relations incident to a free and prosperous commonwealth. The judicial discretion of the prætors (*jus æquum*), the opinions and writings of jurists (*auctoritas prudentum*), the rescripts of the imperial court, and the decisions of cases (*sententiæ receptæ*), were the voluminous exponents of the Roman common law, founded not upon legislative enactments (*leges*), but upon custom (*mores*). The edicts of the prætors, in which it was allowed annually to incorporate new applications of the *jus æquum*, were in the reign of Hadrian revised by Salvius Julianus, and the revision was confirmed by the imperial council, from which time it remained substantially unchanged. In a limited sense this might be called a code of the equitable laws administered by the prætor. Legislative ordinances, or what we should call statutes (*leges*, *plebiscita*, and *senatus consulta*), made comparatively little addition to private law; they related chiefly to political rights and to the forms of judicial administration. So the decrees of the senate and the edicts of the emperor, after the popular government was subverted, during a long period related chiefly to public affairs; and even when they related to private law, it was rather in the nature of a decision or declaration of the law than any new provision. The distinction between legis-

lative and judicial functions was little observed. The rescripts of the emperor (or of those authorized to make answers in his name) for the resolution of doubtful cases, the decrees in actions brought by appeal before the imperial court, and the edicts, as well those relating to the administration of the government as for the regulation of private rights, were all embraced under the general designation of *constitutiones principum*. The great number of these constitutions, and the crudity of many of them, rendered compilations and commentaries indispensable. Among these the principal are the imperial decrees or decisions collected by Paulus; "Rescripts of the Divi Fratres," collected by Papirius Justus; rescripts of Hadrian, compiled by Dositheus; the collection by Ulpian, in his work *De Officio Proconsulis*, of all the ordinances issued against Christians; and lastly, two general collections (*codices*) of constitutions from Hadrian to Constantine, the one by Gregorius, the other by Hermogenes (the latter a supplement to the first), both of which consisted chiefly, as is understood, of rescripts. All of these were private compilations, and do not strictly come under the definition of codes as given at the beginning of this article. The *Codex Theodosianus*, published A. D. 438, by order of Theodosius the Younger, was a compilation of all the edicts of the emperors which were deemed important, and also many of the rescripts. This was a work of great importance, not merely as the initiative of the great work of digesting the whole Roman law afterward completed by Justinian, but for its influence upon several of the Germanic nations, by whom it was adopted or in some degree made the basis of their laws before the revision had been made which is now known by the name of *Corpus Juris Civilis*. The compilations made by order of Justinian in 528–'35, the Institutes, Pandects, and code, and the new constitutions which were published after his death in 565, have been described in the article Civil Law. In the same article will also be found an account of three of the barbaric codes, viz.: the edict of Theodoric, king of the Ostrogoths, in 500; the *Breviarium Alaricianum*, issued by Alaric II., king of the Visigoths, in 506; and the *Lex Romana* of the Burgundians, published in 517–534. All of these were intended chiefly for Roman subjects. But there were also distinct laws for the barbarians themselves, which it will be proper to notice more in detail.—First as to the Franks. There were two tribes, one called Salian (probably from the river Sala, or Yssel, upon which they were first established), the other Ripuarian (from the Latin *ripa*, the name expressing their location upon the banks of the Rhine). These tribes had separate compilations of laws, which continued in force even after the union of the two tribes under Clovis. Of the Salic law our knowledge is derived from manuscripts still extant, most of which are an unmixed Latin text, but others have an intermixture of Germanic words. The latter are entitled *Lex Salica antiqua* (or *antiquissima*, or *vetusta*), the other *Lex Salica recentior* (or *emendata*, or *reformata*). M. Wiarda, in a work entitled *Histoire et explication de la loi salique*, has proved that none of the compilations are of an earlier date than the 7th century, and that the manuscripts containing Germanic words and purporting to be the more ancient are in fact later in time than the others. The laws themselves he supposes to have been compiled after the Franks had become established in Belgium, and that they were originally written in Latin. He also concludes that they were not published as a code by public authority, but were compiled from customs and judicial decisions; and that they do not constitute all the laws of the Salian Franks. The earliest historical notice of any such compilation is in the 8th century, in a work called *Gesta Francorum*. Guizot (*Histoire de la civilisation en France*) deduces from a critical examination of all the manuscripts that the law is essentially penal. It contains 343 penal articles, and only 65 upon all other subjects. The nature of the crimes and punishments which are specified indicates an exceedingly rude condition of society. There is no generalization, but a chaotic mingling together of the various individual cases of crime that might occur in an uncivilized community, without definition, classification, or any arrangement. One peculiarity is observable, which indeed may be found in the laws of all the Germanic nations at an early period, viz., the extreme mildness of punishments as respects free men, whether Franks or Romans. Pecuniary composition, *Wehrgeld* or *Wiedergeld* (prohibition money), was the only penalty prescribed by the Salic law, and this only as a substitute for the right of the injured party to take personal vengeance; but if accepted, the law merely fixed the amount. In respect to slaves it was different; they were subject to cruel corporal punishments, imprisonment, and death. Another peculiarity, which also belonged to the laws of other tribes, was the mode of proof in judicial trials. This was by the oath of compurgators or conjurators, that is to say, a certain number of the friends of the accused who deposed that he had not done what was imputed to him; and on the other hand, conjurators could be produced by the accuser. There was no examination of witnesses nor discussion of the facts, but a simple attestation under oath of the truth of the charge or a denial thereof. The laws of the Ripuarian Franks were essentially the same as those above described, with only the following distinguishing circumstances: 1, that there is more of precision and legislative form, and that the subjects are less exclusively penal; 2, that the mode of proof by compurgators or conjurators is more distinctly regulated; 3, judicial combat is recognized as a mode of deciding controversies. This cus-

tom seems to have been intended as a check upon the right of private revenge. If the offended party insisted upon personal vengeance, then it was to be subject to certain terms, and was to be in the presence of witnesses. The Ripuarian laws, it is supposed, were compiled in the 7th century. The laws of the Burgundians are of an earlier period, probably between the years 468 and 534, the latter being the date of the final conquest of the Burgundians by the successors of Clovis. The chief characteristic of those laws is that they apply to Romans and Burgundians alike, and that civil rights and procedure are more prominent than in the laws of the Franks, probably by reason of the great interfusion of Roman law.—The capitularies of Charlemagne and several of his successors have been commonly classed among compilations of laws. They are, in truth, the acts of the government in all its functions, including instructions to magistrates, financial regulations, political, civil, and canonical legislation, judicial decisions, even moral precepts, and propositions or questions for consideration. Guizot has arranged the acts of Charlemagne into 1,150 articles. Of these the greater proportion belong to canonical legislation, including under that term the acts of councils and the ordinances of the emperor in relation to affairs of the church. The next most considerable subject is political legislation, relating to administrative offices, courts, and police, and is contained in 293 articles. Penal provisions are numerous, but differ little in character from the previous penal laws of the Ripuarians, Lombards, and other barbarian nations who had become subjects of Charlemagne. There is one exception, in the severity with which he punished the conquered Saxons. Legislation concerning private rights is comparatively inconsiderable. Among the capitularies are some additions to the ancient laws, as the Salic and Ripuarian, the laws of the Lombards, Bavarians, &c.; there are also extracts from these laws, which were probably intended for some particular purpose. It is said that a revision of the Salic law, and of the laws of the Lombards and others, was made by order of Charlemagne, but only fragments of such revision appear in the capitularies. In fact, the capitularies themselves are but fragmentary, many of them being imperfect, and others being referred to which are lost. The most complete edition of the capitularies was published by Baluze (Paris, 1677).—The laws compiled by Alfred the Great in the 9th century have been celebrated as the supposed origin of the peculiarities of the English common law. Trial by jury is commonly referred to this monarch as if first introduced by him. But this is certainly not sustained by authentic evidence. It was a familiar principle in the usages of all the Germanic nations that a free man should be tried only by his peers. In the laws attributed to Alfred we find the same general characteristics as in those of the Franks and other Germanic nations, pecuniary compositions for every species of crime, proof by compurgators, and the like. A law was indeed enacted by Alfred, making wilful murder a capital offence, but it seems not to have been enforced. There is one provision in these laws which may have originated in the humanity of the sovereign, but more probably in the regard which the Anglo-Saxons had for a man's house as being sacred, which feeling has been transmitted to their descendants, and exists to this day. If a man who had committed an injury should keep within his own house, his adversary might besiege him for seven days without attacking him; but if within that time the besieged person should be willing to surrender himself and his arms, his adversary might detain him 30 days, but after that must restore him safe to his kindred, and be content with the compensation prescribed by law. Trial by ordeal and other superstitious methods appear to have been frequent among the Anglo-Saxons. Judicial combat, if in use at all, was seldom resorted to until the Normans substituted it in place of compurgation.—Coming down to a more recent period, we find a peculiar law of custom developed under the feudal system, especially in France. In the southern part of that monarchy, which had been occupied by the Visigoths and Burgundians, the Roman municipal institutions, judicial forms, and rights of property, were to a considerable extent preserved. That part of the country was for that reason called *pays du droit écrit*. Yet even here, in some districts, many peculiar customs (*droits coutumiers*) were established in the feudal anarchy. In other provinces, especially the northern, the Roman law was almost entirely lost, at least was no longer distinguishable, and a new system succeeded, of various character, according to the degree of independence maintained by the great feudal lords; and these provinces were designated as *pays du droit coutumier*. The laws of Normandy are the most important on account of their bearing on the English law of landed property. The customs of the county of Paris were next in importance, as they were regarded as precedents in other districts. Many of these local systems were collected in the *Établissements de St. Louis*. In the reign of Charles VII., in 1453, it was decreed by the assembly of the states that all customary laws should be reduced to writing. This brought into distinct and recognized legal existence a vast number of systems, a collection of several hundred of which has been made by Bourdot de Richebourg (*Coutumier général*, Paris, 1724). This diversity, instead of being relieved by general legislation as the authority of the crown increased, was only made more perplexed by *ordonnances* not founded upon comprehensive principles, and therefore having no tendency to assimilate the heterogeneous elements before existing. Collections of these ordonnances were repeatedly made, some of

which received the inappropriate designation of codes; as the *Code Henri*, made by Brisson in the reign of Henry III.; the *Code Murvillac* or *Michau*, under Louis XIII. (1629), relating to judicial procedure; and the *Code Louis XV.*, by Chaussepierre, containing the ordonnances from 1722 to 1740. Several comprehensive ordonnances, which were in fact codes of laws relating to particular subjects, were enacted in the reign of Louis XVI. But the necessity of a general compilation, and the assimilation of all the different systems into a homogeneous jurisprudence for the use of the whole nation, became more and more pressing, till the revolution paved the way for its accomplishment. It was early the subject of discussion, and projects were reported by Cambacérès in 1793 and 1795, which, though incomplete in details, and on the whole unsatisfactory, yet furnished a perspicuous and well arranged outline. By a consular decree, Aug. 12, 1800, a commission was constituted "to compare the order which had been followed in the preparation of the projects for a civil code hitherto published, to determine the plan which the commissioners should think best to adopt, and to discuss the chief principles of civil legislation." Portalis, Tronchet, Bigot de Préameneu, Maleville, and the minister of justice were the commissioners. In 1801 they reported a draft of a civil code, which was submitted to the court of cassation and other courts of appeal, and with the reports of the judges was finally brought before the council of state, in which Napoleon (then first consul) presided in person. The discussion, which was consecutive and thorough, may be found in a work entitled *Conférence du code civil, avec la discussion particulière du conseil d'état*, &c. (Paris, 1805). In the discussion and adjustment of the code, Tronchet, Rœderer, Portalis, Thibaudeau, Cambacérès, and Le Brun were the most conspicuous. Of these, Tronchet was the most regarded by the first consul for profound and enlightened views; Le Brun was the best qualified as a *rédacteur*. In the same manner the other codes were reported, discussed, and amended. The whole revision was finally adopted under the title of *Les cinque codes*, consisting of the civil code (which, as the first in order, and most important, was distinguished by the appellation of the *Code Napoléon*), the code of criminal procedure, penal code, code of civil procedure, and code of commerce. Another was added by Charles X. (1827), entitled the *Code forestier*, which is a collection of laws relating to the administration of the wood lands belonging to the king, or to cities, villages, &c.; and the whole is now published under the title of *Les six codes*. Of the merits of this great work we have sufficient evidence from the fact that it still continues, with but little change, to be the law of France, notwithstanding the subversion of the government by which it was established. The extent of its influence upon the laws of other countries has been very great. Civil codes modelled after the *Code Napoléon* were promulgated in the Two Sicilies in 1819, the Netherlands in 1822 and 1837, Hayti in 1826, Sardinia in 1837, the Swiss cantons from 1819 to 1855, and Bolivia in 1843; and everywhere the Latin races appear to be following these examples.—In Germany, until a recent period, the laws, both civil and criminal, have been in a state of great confusion. In 1532 the statutes commonly known as the *Carolina Criminalis* were enacted by the emperor Charles V. for the regulation of criminal proceedings. Prior to that time the law of the empire relating to crimes was threefold: 1, the Germanic, contained in the ancient barbaric codes and subsequent local usages; 2, the provisions of the Roman law in the compilations of Justinian, particularly the *Libri Terribiles* of the Digest, and the 18th title of the Institutes; 3, the various penal provisions of the canon law (*Corpus Juris Canonici*). The *Carolina Criminalis* purported to be "a simple instruction for unlearned judges, to teach them how to proceed in criminal cases." It did not supersede the previously existing laws, but referred to them, sometimes defining what was obscure, and fixed punishments with more exactness, but more particularly regulated the form of criminal proceedings. Being in form didactic rather than statutory, a large license was taken by judges in administering the law as thus prescribed, and uncertainty still prevailed. The revision of the Prussian laws known as the *Code Frédéric*, published 1749–'57, revised after 1780, but not put in force till 1794, was intended to obviate, according to its preface, 1, the difficulties of the Roman codes; 2, the disputes of the commentators; 3, the contradictions of Roman and German law. Like the Institutes, it divides the subject into the law of persons, of things, and of obligations. The penal laws have since been repeatedly revised. In 1826 a commission was appointed to prepare a new penal code, in pursuance of which six different projects were presented and discussed at various times, during a period of 25 years; and the code which is now in force was finally adopted in 1851, and has been highly praised. Other German states made efforts toward codification in the last century. A criminal code for Bavaria was promulgated in 1751, and for Austria in 1768, and again in 1786. In the latter country a civil code was produced in 1811, founded in great measure on the Prussian code; and a code of criminal procedure was published in 1852, which adopts the classification of offences contained in the French penal code. In Bavaria a penal code prepared by Feuerbach was adopted in 1813, which was received with such favor as to be accepted by several other states.—In Russia a commission, which originated with Peter the Great, reported in 1832 the *Svod zakonov*, which became the exclusive source of law in 1835. This comprises eight codes, devoted respectively to—1, the state and imperial family; 2,

public services; 3, finance; 4, the classes of persons; 5, civil law; 6, administration; 7, police; 8, penal law. It contains about 38,000 articles, each of which is referred to some preëxisting ordinance.—In the United States the first experiment at a legislative remodelling of the entire law was made in Louisiana. That state was originally a French colony; it was afterward ceded to Spain, when the Spanish law was introduced, but again reverted to the French, and from them was acquired by the United States. The confusion of laws introduced by these numerous changes of government made a revision necessary, and a code was prepared and adopted in 1806–'8, which did not, however, supersede the ancient laws, except so far as they conflicted with it. A further revision was found necessary, and in 1822 commissioners were appointed for that purpose, who reported a complete civil code, which was adopted in 1824. Mr. Edward Livingston, one of the commissioners, and who is understood to have had the chief part in the compilation, had been familiar with the common law, and introduced from it many valuable provisions, though the basis of the work was mainly the French civil code. Mr. Livingston also reported a penal code, which was received with favor by the legislature, but not formally adopted. It brought to its author great reputation, especially in Europe. A penal code and code of procedure have since been adopted. The most important, however, of the attempts at codification which have been made in the United States are those of the state of New York, which had their origin mainly in the able and persistent efforts of David Dudley Field, which he began in 1839, by a public letter on the subject addressed to Gulian C. Verplanck, then a state senator, and continued by a series of addresses to legislative committees, of articles in the newspapers, and of pamphlets. The result of this agitation was that the revised constitution of New York, adopted in 1846, had two separate provisions in relation to codification. The first directed the appointment of three commissioners to reduce into a code the whole body of the law of the state, or so much thereof as might be deemed expedient. The other directed the appointment of three other commissioners to revise the rules of practice and pleadings in courts of record. Both commissions were filled by the legislature in 1847. The practice commissioners made a partial report on Feb. 29, 1848, containing an incomplete code of civil procedure, in such shape as to cover the principal reforms proposed in the practice of courts of record in civil cases, and this report was immediately adopted by the legislature. The complete codes of civil and criminal procedure were not reported until Dec. 31, 1849, and were never adopted by the legislature, although some portion of the amendments suggested by the commissioners were gradually incorporated by legislation into the text of the original and incomplete code enacted in 1848. On April 6, 1857, the legislature created a new commission to prepare codes of all the law not covered by the reports of the practice commission, and appointed David Dudley Field, William Curtis Noyes, and Alexander W. Bradford the commissioners, for a term of five years, which was afterward extended for three years further. They reported a political code, a penal code, and a civil code. These codes have not up to the present time been adopted by the legislature of New York; and indeed, although reported by committees, the legislature has always been too much occupied with special legislation to give the necessary time for their consideration. The code of civil procedure, in whole or in part, has been adopted into the laws of 23 states and territories of the Union, viz.: New York, Ohio, Indiana, Kentucky, Missouri, Wisconsin, Iowa, Minnesota, Kansas, Nebraska, Nevada, California, Oregon, North Carolina, South Carolina, Alabama, Washington, Montana, Idaho, Dakota, Wyoming, Utah, and Arizona. It has also been adopted for the consular courts of the United States in Japan. The code of criminal procedure has been adopted in ten or more states and territories. In California a code commission created by the legislature reported in January, 1872, a complete series of codes framed upon the basis of the projected New York codes, all of which were adopted by the legislature, to take effect on Jan. 1, 1873. This consisted of a political code, a civil code, a penal code, and a code of civil procedure; the practice in criminal cases being regulated by the penal code. The territory of Dakota in 1864 also adopted the civil and penal codes of the New York commissioners. The principal feature of the code of civil procedure thus adopted in New York and other states was the entire fusion of law and equity by which the same principles were for the first time in the history of New York, or of any other states inheriting the English practice, applied to all species of actions. The courts of Pennsylvania had from the organization of the state decided actions at law upon the principles of equity, but they have never been clothed with all the powers of courts of equity as defined by the English practice. The union in one tribunal of all the powers belonging to a court of chancery as well as to a court of common law, and the application of all the principles of both systems to every controversy arising before the courts, was therefore an absolute novelty in 1848 in any state or colony founded by Englishmen and inheriting English law. The practice in English law courts being entirely different from that of courts of equity, it was necessary to devise a single and homogeneous system including the most useful parts of each form of procedure, and this was done by the code of civil procedure reported by the New York commissioners. Without this preliminary reform it would have been almost im-

possible to frame an intelligible code of law for an English-speaking community, inasmuch as many elementary questions were disposed of in one court upon precisely the opposite principles from those enforced by the other court. This difficulty being removed, however, it has been found as practicable to reduce the common law of England to the form of a code as the law of any other country. The civil code, defining the rights of individuals as between each other, is the one most interesting to the public at large. This code, as reported in New York and adopted in California and Dakota, consists of three principal divisions, viz., persons, property, and obligations, and a fourth or supplemental division containing general provisions applicable to more than one of the chief divisions already mentioned. Under the head of "Persons" are treated the subjects of personal rights and relations, including marriage, parentage, guardianship, &c., with the rights and duties growing out of them. Under the head of "Property" the rules, conditions, limitations, and incidents of ownership in both real and personal property are stated, including the modes of transfer by grant, will, inheritance, and otherwise. Under the head of "Obligations" the interpretation, transfer, and extinction of obligations are treated, together with the entire subject of contracts, under which special title are set forth the rules governing the creation, interpretation, and extinction of contracts, and the particular rules governing sale, exchange, deposit, loan, hiring of property, personal service, carriage or transportation, trusts or confidential relations, agency, partnership, insurance, indemnity, guaranty, liens (including pledge and mortgage), and negotiable instruments. Under the fourth division there are five titles: 1, relief, including the law of damages, injunctions, specific performance, &c.; 2, debtor and creditor, including fraudulent transactions, and assignments for the benefit of creditors; 3, nuisance; 4, maxims of jurisprudence; 5, definitions. The civil code of California has, in addition to the matter contained in the New York code, extensive and detailed provisons regulating the management of corporations, and the business of mining, which has in that state an exceptional importance.—The subject of codification has for many years been under discussion in England and the United States, especially since the time of Jeremy Bentham; but the codes framed by the New York commissioners were the first in which any real attempt was made to embody the old law of any English-speaking community. Since their publication the expediency of codification has become a subject of renewed interest in England, and the adoption of a code has been urged not only by private individuals but by members of the present government (1873), with every prospect of ultimate success. A commission was some time since appointed in England to prepare a digest of the existing law as the basis for the construction of a code, and the result of its efforts is generally understood to be strong conviction in the minds of the leaders of the legal profession that a complete code rather than a mere digest must become an absolute necessity.

CODEIA (Gr. *κώδεια*, head of poppy), an alkaloid found in opium, in which it exists combined, like morphia, with meconic acid. It has the formula $C_{35}H_{20}NO_5$. It is soluble in water, alcohol, and ether, but is insoluble in alkaline solutions. It combines with acids to form crystallizable salts. (See OPIUM.)

CODEX (Lat.), in Roman antiquity, originally the trunk of a tree, afterward applied to the wooden tablets smeared with wax which were used for writing. At a later period it became the name of all large manuscripts (*codices manuscripti*), as the works of the historians and poets; and under the emperors and subsequently, it designated collections of civil and ecclesiastical laws. Of the last, the oldest and most celebrated are the *Codex Theodosianus*, the *Codex Justinianus*, the *Codex Canonum Ecclesiasticorum*, belonging to the time of Pope Innocent I., and the *Codex Canonum Ecclesiæ universæ*, revised by the monk Dionysius about 527. Its principal modern application is to the uncial manuscripts of the New Testament, as the *codices Alexandrinus*, *Vaticanus*, *Ephraemi*, *Bezæ* or *Cantabrigiensis*, *Claromontanus*, &c., 41 in all, which are also designated by the Roman letters, as codices A, B, C, D, or by combinations, as F^a, W^b, or by the Greek letters, as Δ, Θ.—A *codex rescriptus* (Lat., a rewritten codex), now usually termed a palimpsest, is an ancient parchment on which the original writing has been defaced, and a different composition copied.

CODICIL (Lat. *codicillus*, diminutive of *codex*), an addition or supplement to a will, requiring the same formalities of execution and the same testamentary capacity. The distinction between the two formerly was, that by a will an executor was appointed, and by a codicil not; but now an executor may be appointed by either or by neither, and the codicil is employed to meet changes of purpose on the part of the testator, and to provide for new circumstances. A will and codicil are to be construed together, and the latter, as the more recent expression of the testator's purpose, will modify and control the other wherever they are not in harmony; but in other particulars the will is to stand. There may be several codicils to a will, all of which must be probated with it; but any one may be rejected for want of the legal requisites, and the others will remain and have effect as if that had never been made.

COD-LIVER OIL, the oil drained or expressed from the livers of the cod, and also of the pollock, hake, and haddock, largely used in medicine. Other fish oils are sometimes fraudulently substituted; the adulteration is to be detected by the taste and smell, the ab-

sence of the violet or red color reaction with sulphuric acid characteristic of the biliary acids, and by the specific gravity, that of shark liver oil, which also gives the violet reaction with sulphuric acid, being 0·866, which is less than that of cod liver oil. The latter varies in color from a light yellow to a dark brown, and in taste and smell from a slight and hardly disagreeable, though characteristic flavor and odor, to a nauseous taste and a repulsive odor. These varieties depend upon the condition of the livers at the time of the extraction of the oil, and upon its subsequent treatment. That which is derived from fresh livers is the lightest in color and has the least smell. The darker and more disagreeable varieties are procured from livers which have undergone more or less putrefaction. The chemical composition of cod liver oil is not yet satisfactorily made out. It contains a dark brown, odorless and tasteless substance called gaduine; oleine and margarine; butyric and acetic acids; biliary principles; iodine, chlorine, and bromine in exceedingly small quantities; phosphoric and sulphuric acids; phosphorus, lime, magnesia, soda, and iron. The volatile alkaloid propylamine, which imparts a peculiar odor to herring pickle, and which is probably identical with secalia obtained from ergot, may be derived from cod-liver oil by distillation with ammonia.—Cod-liver oil is employed with advantage in diseases which are characterized by impaired nutrition. It is regarded as one of the most useful remedies known in medicine. In pulmonary consumption, although not a specific, it contributes, when well borne, to the nourishment of the patient, relieves many unpleasant symptoms, and often prolongs life. Its action is probably that of an easily assimilated fat, furnishing in itself an important element of food, and assisting in the assimilation of other nutritive principles. Considerable importance has been attributed to the therapeutic action of the minute quantity of iodine and other inorganic constituents which cod-liver oil contains, and with better reason to the biliary acids and other peculiar substances that enter into its composition. The biliary principles may probably be found in larger proportion in the "extract of cod liver," prepared by evaporating the watery liquid which escapes from the liver when the oil is extracted, than in other preparations of oil. This preparation has been declared, chiefly however by those interested in its sale, to possess a degree of remedial efficacy that has not yet been proved. The chief objection to the administration of cod-liver oil, and one that is sometimes insuperable, is its taste. This may be more or less completely disguised by aromatics, bitters, oil of bitter almonds, or the froth of porter. It may be partially saponified by an alkali, or made into an emulsion. One of the simplest and easiest methods of avoiding its disagreeable taste is to masticate a few cloves and swallow the oil before their pungent impression upon the mouth has departed, when the taste of the oil will not be perceived. Cod-liver oil is chiefly used as a remedy in pulmonary consumption, but its efficacy is not confined to this affection. It may be advantageously prescribed in many forms of impaired nutrition, and especially in the protean derangements resulting from impaired nervous power. It should not be administered when it reduces the appetite or disturbs digestion. It is usually borne best if it is taken about an hour after a meal. Its good effects are most evident when it has been taken for several months consecutively. The dose is from a teaspoonful to a tablespoonful three times a day. Four or five grains of pancreatine added to each tablespoonful will make the oil set better.

CODOGNO, a town of Lombardy, Italy, in the province and 32 m. S. E. of Milan, between the Po and the Adda; pop. about 9,000. It has broad streets, several colleges and schools, good private buildings, some handsome churches, a hospital, and a theatre. It is noted for its silk manufactures, and for being the principal mart in Italy for Parmesan cheese. The Austrians were defeated here in 1746 by the Spaniards, and in 1796 by the French.

CODRINGTON. I. Sir **Edward,** an English admiral, born in 1770, died in London, April 28, 1851. He became a lieutenant in the navy in 1793, and served on board Lord Howe's flag ship at the victory over the French, June 1, 1794. He was soon after made a post captain, and at the battle of Trafalgar commanded the Orion, 74. Subsequently he took part in the bombardment of Flushing, in Strachan's expedition to the Scheldt, and in the defence of Cadiz; and commanded a squadron against the French on the coast of Catalonia. In 1814 he was promoted to the rank of rear admiral, and employed on the American station. On July 10, 1821, he became vice admiral, and in 1826 was placed in command of the fleet in the Mediterranean. In this capacity he had the chief command of the combined British, Russian, and French fleets at the battle of Navarino, Oct. 20, 1827, and, although that action was spoken of by the British government as an "untoward event," he was rewarded both by England and Russia. He represented the borough of Devonport in parliament from 1832 to 1839. A memoir of his life has been edited by his daughter, Lady Bourchier (2 vols., London, 1873). **II.** Sir **William John,** an English general, son of the preceding, born in 1800. He entered the Coldstream guards in 1821, and rose through the successive grades to the rank of major general, which he attained in 1854. His promotion having left him unattached, he joined the army in the East as an amateur, but the commander-in-chief, Lord Raglan, soon gave him the first brigade of the light division, with which he played a distinguished part at the battles of the Alma and Inkerman; and when Gen. Sir George

Brown was wounded, he succeeded to the command of the light division. He directed the attack on the redan, but his conduct on that occasion subjected him to depreciating comments from some quarters. On the resignation of Gen. Simpson he was appointed to the chief command, and in that capacity brought the troops home. He was elected member of parliament for Greenwich in April, 1857, and sat till 1859, when he was appointed governor of Gibraltar. The colonelcy of the 23d fusiliers was bestowed upon him in 1860, and he was promoted to the rank of general in July, 1863.

CODRUS, the last king of Athens, son of Melanthus, reigned, according to tradition, about 1068 B. C. The legend relates that when Attica was invaded by the Dorian Heraclidæ from Peloponnesus, the oracle declared that those would be victorious whose king should be slain. Codrus thereupon determined to sacrifice himself, entered the camp of the enemy in disguise, provoked a quarrel with the common soldiers, and was slain in the fray. The Dorians, having learned the death of the Attic king, abstained from hostilities and returned home; and the Athenians, thinking no one worthy to succeed Codrus, abolished the kingly dignity, and instituted in its stead the office of archon. Medon, son of Codrus, was the first archon.

COEHORN, or **Cohorn, Menno van,** baron, a Dutch general and engineer, born in Friesland in 1641 (according to some in 1632), died at the Hague, March 17, 1704. A captain at the age of 16, he distinguished himself at the siege of Maestricht, and at the battles of Senef, Cassel, St. Denis, and Fleurus. During the intervals of active duty he devoted much attention to the subject of fortification, with the view of equalizing the chances between besiegers and besieged, the new system of his contemporary Vauban having given great advantages to the latter. While a young man he gained a name as an engineer, and by the time he had reached middle life was recognized as the best officer of that arm in the Dutch service. The prince of Orange promised him a colonelcy, but as he was remiss in fulfilling the pledge, Coehorn retired in disgust, with the intention of offering his services to the French. His wife and eight children, however, were arrested by order of the prince as hostages for his return, which quickly brought him back, when he received the promised rank, and was afterward appointed successively general of artillery, director general of fortifications, and governor of Flanders. His whole life was spent in connection with the defences of the Low Countries. At the siege of Grave, in 1674, he invented and for the first time made use of the small mortars called cohorns, for throwing grenades, and in the succeeding year elicited the applause of Vauban by successfully crossing the Maas, and carrying a bastion which was considered as protected by the river. After the peace of Nimeguen (1678) he was employed in strengthening various already strong places. Nimeguen, Breda, Bergen-op-Zoom, and other fortresses, attest the value of his system. The last named place he considered his masterpiece, but it was taken after a long siege in 1747 by Marshal de Löwendal. During the campaigns from 1683 to 1691 he was in active service. The siege of Namur in 1692 gave him an opportunity to test his system against that of Vauban, for these two great engineers were there opposed to each other, Coehorn in defending a work which he had constructed to protect the citadel, and Vauban in attempting to reduce it. Coehorn made an obstinate defence, but, being dangerously wounded, was compelled to surrender to his rival. He was afterward engaged at the attacks on Trarbach, Limburg, and Liége, and in 1695 aided in retaking Namur. In the war of the Spanish succession he besieged successively Venloo, Stephensworth, Roeremond, and Liége; and in 1703 he took Bonn, on the Rhine, after three days' cannonade of heavy artillery aided by a fire of grenades from 500 cohorns. Next he passed into Flanders, where he gained several successes over the French, and subsequently directed the siege of Huy. This was his last service, for he died soon afterward of apoplexy, while waiting a conference with the duke of Marlborough on the plan of a new campaign. Coehorn's greatest work, *Nieuwe Vestingbouw* (fol., Leeuwarden, 1685), was translated into several foreign languages. His plans are mostly adapted to the Dutch fortresses, or to those which are similarly situated on ground but a few feet above water level. Wherever it was practicable, he encircled his works with two ditches; the outermost full of water, the inner dry, and usually of the width of about 125 ft., serving as a *place d'armes* for the besieged, and in some cases for detachments of cavalry. The theory of his system, both of attack and defence, was the superiority of a combined mass over isolated fire. Professionally, Coehorn was accused of wasteful expenditure of life, in which respect he contrasted unfavorably with Vauban, who was sparing of men. He refused inducements offered by several foreign governments. Charles II. of England knighted him. He was buried at Wijkel, near Sneek, in Friesland, and a monument was dedicated there to his memory. His biography was written by his son Theodorus (new ed., by Sypestion, 1860). For his system of fortifications, see Zastrow, *Geschichte der Befestigung* (3d ed., 1854).

COELLO, Claudio, a painter, born in Madrid, of Portuguese parents, in 1621, died there in 1693. He excelled both in color and design, and was made painter to Charles II., for whom he executed many works in the Escorial. His chief work is the altarpiece in the sacristy, representing the ceremony of the collocation of the host. His works are numerous in Madrid, Salamanca, and Saragossa.

CŒLUS. See URANUS.

CŒUR, Jacques, a French merchant and royal treasurer, born at Bourges near the end of the 14th century, died in the island of Scio, Nov. 25, 1456. He was at first one of the masters of the mint at Bourges, and afterward engaged in commerce on a vast scale, visiting Egypt and Syria, establishing depots throughout the East, and covering the Mediterranean with his ships. Thus he acquired a great fortune and attracted the attention of Charles VII., who in 1435 appointed him head of the French mint, and afterward treasurer. His excellent management of affairs caused the king to ennoble him, and to intrust him with high functions in the French provinces, and with diplomatic missions in Italy. Cœur contributed 200,000 crowns to help the king in rescuing Normandy from the English. After the successful end of the war, his influence became so great as to give offence to envious persons, who after the death of the king's mistress, Agnes Sorel, charged him with having poisoned her, and caused him to be arrested (1451), and his vast property to be confiscated. Although the charge was proved to be groundless, he was detained in prison till 1455, when he effected his escape. Repairing to Rome, he was kindly received by Pope Nicholas V., and was enabled to gather the broken remains of his fortune. Pope Calixtus III. selected him in 1456 as captain general of a fleet against the Turks. On this expedition Cœur was overtaken by illness, died, and was buried in the church of the Franciscans in Scio. He had vainly implored the clemency of Charles VII. in favor of his family. Under Louis XI. his memory was exculpated from all charges, and a part of his property was afterward restored to his descendants.—See *Jacques Cœur et Charles VII., ou la France au XV^e^ siècle* (2 vols., Paris, 1853).

CŒURS D'ALÊNE (Awl-hearts), an Indian tribe in Idaho and Washington territories, of the Selish family, although their dialect differs greatly from others of the language. They call themselves Skizoomish, or Skitzuish, but are known generally by the above name, given them by the French voyageurs. They were poor, distrustful, and cruel, and lived on fish, roots, and small game, not visiting the bison grounds. Although estimated in 1822 at 2,000, they numbered but 300 in 1870. In 1841 Father De Smet visited them. In 1842 a Catholic mission was begun, which was removed in 1846 to a place 30 m. from Cœur d'Alêne lake (the source of Spokane river), where they had a church, a mill, and dwellings. The tribe became Christians, but viewed with jealousy the entrance of whites into their country; and in 1858 their chief, Vincent, with 100 warriors, joined Kamiakin, the Yakama chief, in his attack on Col. Steptoe. They were defeated by Col. Wright in the battles of Four Lakes and Spokane plains, and have since been peaceful. A part of the tribe in Idaho had a reservation set apart for them by an executive order of June 14, 1867; and by order of July 2, 1872, those in Paradise valley were removed against their protest to a reservation between the Okinakane and Columbia rivers and British America.

COFFEE (Turkish, *kahve*), the seeds of the plant *coffea Arabica*, of the order *cinchonaceæ;* also the beverage prepared by infusion or decoction of them in boiling water. In southern Abyssinia the plant grows wild in great profusion, and there it has been in use from very remote times. Its name is therefore generally derived from Kaffa, the name of a district S. of Abyssinia. It also grows wild in western Africa. The coffee-producing belt of the world lies between the isothermal lines of lat. 25° N. and 30° S. The plant grows at an altitude as high as 6,000 ft. above the sea; but it does not flourish where the temperature is below 55°. It thrives in warm situations upon the slopes of hills and in soil not retentive of rain. The cultivation of coffee is widely diffused throughout the tropics, the



The Coffee Plant.

principal countries being Brazil, Java, Ceylon, Sumatra, the isle of Réunion, the western coast of India, Arabia, Abyssinia, the West Indies, Central America, Venezuela, Guiana, Peru, Bolivia, and some of the Pacific islands. The plant attains the height of 8 to 20, and sometimes 30 ft. The trunk is covered with a grayish bark, and its white flowers grow in thick clusters around the branches. It is usually kept down by pruning to about 5 ft. in height, to increase its productiveness and for convenience in gathering the fruit. The slender and pliable branches then spread out and bend down like those of an apple tree. The plants are raised from the seed in nurseries, and when a year old are transplanted and set out in rows. In three years they begin to yield fruit, but are not in full bearing till the fifth year; they continue to yield for 20 years or longer. The leaves, of oblong-ovate and pointed form, grow in pairs, one opposite the other. They are four or five inches long, smooth and shining, and of dark green color. The plant being an

evergreen, the foliage is always fresh; and though at certain seasons the blossoms suddenly appear scattered among the dark leaves like flakes of snow, they are hardly ever entirely absent. They continue to put forth while the fruit of former blossoms is coming to maturity, and so the ripe coffee may be gathered at almost every season; but the real harvests are usually two, and sometimes three, in the course of the year. The fruit when ripe becomes red and finally dark purple. It resembles a cherry, and the fleshy portion which surrounds the seeds is very sweet and palatable. Each berry contains two seeds; their flat sides are opposed to each other in the centre of the pulp, and are separated by a thin layer of this and by the tough membrane which closely envelopes both. Sometimes one seed is abortive, and the other becomes round. This is the case with the Wynaad coffee from India, and the so-called "male berry" coffee. As the fruit dries, the pulp forms a sort of shell or pod, which is removed by a process of curing in order to prepare the seed for market. In the West Indies the fruit is picked by hand at intervals during the seasons of harvest; but in Arabia, where no rains prevail which would beat it from the trees, it is allowed to remain till ready to fall, and is then shaken off upon cloths spread upon the ground. Its perfect ripeness may be one reason of its superior quality. It is next dried in the shade, and the pulp is afterward removed by hand. In the East and West Indies and South America the curing is usually performed by exposing a layer of the fruit several inches in thickness to the heat of the sun, so that fermentation takes place. When the moisture has disappeared, the dried fruit is passed between wooden rollers, and sometimes pounded in wooden mortars, and the pulp is then washed away. The tough membrane is separated after the seeds are dry by a similar process with a heavy pair of rollers. The chaff is next removed by winnowing.—From Ethiopia the use of coffee is said to have been introduced into Persia as early as A. D. 875, and into Arabia from the latter country or from Africa about the 15th century. The earliest written accounts of the use of coffee are by Arabian writers of this period; and it appears that in the city of Aden it became in the latter half of this century a very popular drink, first with lawyers, studious persons, and those whose occupations required wakefulness at night, and soon after with all classes. Its use gradually extended to other cities, and to those on the eastern shores of the Mediterranean. It is said to have been publicly sold in Constantinople in 1554, and to have found its way thence to Venice in 1615. Rauwolf, a German (in 1582) is said to be the first European who makes mention of it. The plant is described in the works *De Plantis Ægypti* and *De Medicina Ægyptiorum* of Prospero Alpini, 1591 and 1592. Burton in his "Anatomy of Melancholy" (1621) is supposed to be the first English writer who notices it. "The Turks," he says, "have a drink called coffee (for they use no wine), so named of a berry as black as soot and as bitter, which they sip up as warm as they can suffer, because they find by experience that that kind of drink so used helpeth digestion and procureth alacrity." A Greek servant of a Turkey merchant opened the first coffee house in London in 1652, the first in England having been opened a year before at Oxford by a Jew, Jacob. At the close of the century the annual consumption of coffee in the kingdom amounted to about 100 tons. Its culture was introduced into Java from Arabia by the Dutch between 1680 and 1690, and it was thence extended throughout the East India islands. In 1715 Louis XIV. received from the magistrates of Amsterdam a fine coffee tree, then bearing both green and ripe fruit. This, according to Du Tour, was the stock of all the West India coffee. The Dutch introduced its cultivation into Surinam in 1718. (See H. Welter, *Essai sur l'histoire du café*, Paris, 1868).—The raw coffee beans are tough and horny, difficult to reduce to powder, and consequently require a preparatory roasting, that water may take up their soluble ingredients. Even after this the hardness of the fragments is such that the genuine particles may by this quality be distinguished from those of other substances used as adulterants. The average composition of raw coffee, as determined by M. Payen, is in 100 parts:

Cellulose	34·00
Water	12·00
Fat	10 to 13·00
Glucose, dextrine, and organic acid	15·50
Legumine and caseine	10·00
Other nitrogenous substances	3·00
Caffeine (free)	0·80
Caffetannate of caffeine and potassium	3·5 to 5·00
Viscid essential oil (insoluble in water)	0·001
Aromatic oils, some lighter, others heavier than water	0·002
Ash	6·70

Some authorities state that it contains from 6 to 8 per cent. of cane sugar; in the roasting this must be nearly or quite all converted into caramel. The most important principles are the caffeic acid, resembling in its astringent character, and also in containing much gluten, the tannin of tea; the alkaloid, caffeine, which is identical with the theine of tea; and the fragrant volatile oil, called caffeone. This oil is distinguished by the microscope in minute drops in the cells or between the outer membrane and the body of the seed, and may be taken up by distillation with water. Roasting disperses it through the solid substance, and in part or wholly expels it, if the process is pushed too far. The caffeic acid, especially, is modified by roasting, and is supposed by chemists to afford the greater portion of the flavor and peculiar properties of the coffee. The proportion of caffeine is only about one half that of theine in an equal weight of tea. (See CAFFEINE.) Coffee when roasted loses its hygroscopic water, which should first be allowed to

escape at a moderate heat from an open vessel. The process may then be continued at a higher temperature in a vessel closed to prevent the escape of the aroma, and constantly agitated to avoid charring the grains and expelling the oil, by which its bitter quality is made to predominate and the aromatic is lost; a slight excess of heat injures the quality of the coffee. The process should be stopped when the beans are of a chestnut brown; they have then lost about 20 per cent. in weight and gained 50 per cent. in bulk. When removed from the fire, the vessel should be kept closed until cool, that the aromatic vapor may be reabsorbed as much as possible. After roasting, it deteriorates by exposure, and should therefore be soon used, unless kept in tight vessels. It may be injured by absorbing the odor of other substances. Even the raw coffee is liable to be damaged from this cause, and it is found objectionable to ship it in vessels that have been previously freighted with sugar; a few bags of pepper have spoiled a whole cargo of coffee. Freshly roasted and ground coffee tied up in linen has been found to ignite spontaneously. After roasting, the coffee is ground to powder. Boiling, if continued, will cause a loss of the aroma, and increase the bitterness; hence an infusion obtained by steeping is preferable to a decoction, but the water should remain in contact with the coffee long enough to extract the greater portion of its agreeable qualities, which is not the case in the use of the percolating apparatus introduced by Count Rumford, and afterward variously modified. In Arabia the berry is coarsely broken in a mortar, boiled smartly, and strained before drinking. In Asia coffee is used in a thick decoction. In Sumatra the natives make use of the leaf of the plant instead of the seed, ascribing to it more of the bitter and nutritious property. It may also be cultivated for the leaves where the production of seed would fail from unsuitableness of climate or soil. The leaves are moderately roasted and then rubbed to powder in the hands, and this powder is used like tea. The infusion is said to resemble in taste coffee, as usually prepared, and tea combined.—It is a remarkable fact that the same peculiar principle should exist in three or more vegetable productions, which, though not at all resembling each other in other respects, have been selected as beverages by almost all nations, some adopting one of them and others another. This fact, pointed out by Liebig, as also that this principle furnishes the elements of the bile, is suggestive of a peculiar adaptation of it to the needs of the human system. This principle, called theine in tea and caffeine in coffee, is theobromine in cocoa, and the same is recognized in the *guarana officinalis* and the *ilex Paraguensis*, which have long served the aborigines of South America the purposes of tea. Coffee and tea are both used in temperate regions; but in the colder climes tea appears to be generally preferred, and is frequently exclusively employed. The northern limit of the coffee-consuming portion of the world is about 60°. —The best coffee of commerce is the Mocha, and next to this is the Java. The seeds of the former are small and of a dark yellow color; those of Java and the East Indies are larger and of a paler yellow; while those of the West Indies and Brazil have a bluish or greenish gray tint. The Mocha coffee is grown in the province of Yemen, in Arabia; but much of the coffee sold under that name is produced in the East Indies and sent to Mocha, where it is reshipped, while no inconsiderable portion of it comes from Africa and Brazil. Java coffee is distinguished into pale yellow, the newest and cheapest, and brown, which is the oldest and most esteemed. These varieties depend on the curing and the age of the coffee. The principal markets for Java coffee are Holland and the United States. The greatest coffee-producing country is Brazil, more than half the coffee consumed in the world being produced there. It is the great commercial staple of the empire, and its principal market is the United States. Besides the provinces adjacent to Rio de Janeiro, the coffee plant flourishes in the shade of the Amazon forests, and, with moderate care, yields two annual crops; and the Ceará coffee, much esteemed, grows on the mountain slopes, at an elevation of from 2,000 to 3,000 feet above the sea. In the province of Pará the coffee plant is seen growing on almost every roadside, thicket, or waste. The coffee of Brazil has little reputation, and is even underrated. This is attributed by Prof. Agassiz to the fact that "a great deal of the best produce of Brazilian plantations is sold under the name of Java, or as the coffee of Martinique or Bourbon, while the so-called Mocha coffee is often nothing but the small round beans of the Brazilian plant found at the summits of the branches and very carefully selected." The total exports from Rio de Janeiro and Santos are stated at 401,127,200 lbs. in 1869–'70, 468,063,200 lbs. in 1870–'71, and 327,226,080 lbs. in 1871–'2. The amount of coffee received into the United States from Brazil has been as follows for a series of years:

Year	Pounds.	Value.	Year.	Pounds.	Value.
1860	156,583,272	$16,984,135	1869	205,473,604	$19,255,967
1865	80,529,223	7,798,370	1870	183,413,456	18,322,580
1866	166,929,289	13,707,820	1871	257,472,708	24,339,488
1867	147,136,981	15,386,844	1872	194,218,511	23,970,822
1868	199,326,171	.....			

In 1868, 15,822,501 lbs. of coffee from Brazil were imported into Great Britain; in 1869, 22,267,953; in 1870, 14,057,893; and in 1871, 23,066,344. Next to Brazil in extent of production is Java. The amount exported from Java and Sumatra to Europe in 1860 is stated at 122,790,923 lbs.; in 1869, 121,655,798; and in 1870, 156,010,912. Almost the entire production of Java is shipped to Holland. The amount thus received into Holland in 1867 was

157,036,316 lbs.; in 1868, 145,935,724; in 1869, 110,456,626; and for the 11 months ending Nov. 30, 1870, 142,039,928. Great Britain is the principal market for the coffee produced in Ceylon, which ranks third as a coffee-producing country. In 1860, the amount imported from Ceylon into Great Britain was 63,244,900 lbs., valued at £1,599,293; in 1868, 101,929,153 lbs., valued at £2,986,479; in 1869, 95,103,970 lbs., valued at $2,867,724; in 1870, 97,964,922 lbs., valued at £2,790,898; and in 1871, 90,680,570 lbs., valued at £2,623,263.—The most extensive coffee-consuming countries are the United States, Great Britain, France, and Germany. In the United States, according to the report of the chief of the bureau of commerce and navigation, the consumption for several years, ending June 30, has been as follows:

Year	Pounds.	Value.	Year.	Pounds.	Value.
1867	159,644,977	$17,805,087	1870	253,571,664	$25,630,715
1868	212,379,267	22,315,316	1871	120,932,617	29,428,894
1869	230,814,376	22,779,574	1872	239,735,829	26,140,339

The total amount of coffee imported into the United States for a series of years, with the value, is as follows:

Year.	Pounds.	Value.	Year.	Pounds.	Value.
1860	200,998,751	$21,768,939	1867	187,236,580	$20,696,259
1862	40,474,917	4,767,117	1868	248,983,900	25,288,451
1863	80,461,614	10,395,360	1869	254,160,993	24,531,743
1864	131,622,782	16,621,586	1870	235,256,574	24,234,879
1865	104,316,581	10,966,541	1871	317,992,048	30,992,869
1866	174,280,674	19,739,381	1872	298,805,946	37,942,225

The chief countries whence coffee was imported into the United States in 1872 were:

COUNTRIES.	Pounds.	Value.
Brazil	194,218,511	$23,970,822
British East Indies	4,141,547	516,074
British West Indies	2,841,261	383,924
Central American States	9,598,954	1,182,053
Dutch East Indies	14,722,299	3,300,417
England	5,979,350	948,312
France	7,695,324	1,175,003
Germany	3,093,439	476,572
Hayti	3,874,781	468,864
Holland	843,243	154,180
Mexico	1,878,301	248,022
Porto Rico	2,021,891	319,558
United States of Colombia	4,142,067	498,696
Venezuela	28,183,607	3,604,496

The total amount of coffee imported into Great Britain for the year ending Dec. 31, 1871, was:

FROM	Pounds.	Computed real value.
Brazil	23,066,344	£564,611
British India	33,413,058	960,923
Central America	19,544,519	568,262
Ceylon	90,680,570	2,623,263
Other countries	25,288,289	677,452
Total	191,992,780	£5,394,511

The imports and the quantities retained for home consumption have been:

YEARS.	Imports, lbs.	Value.	Home Consumption, lbs.
1865	137,997,451	£4,600,887	30,505,972
1866	127,044,816	4,089,329	30,630,236
1867	137,729,716	4,362,760	31,282,023
1868	173,902,477	4,858,107	30,356,818
1869	173,416,332	4,927,805	28,839,100
1870	179,901,864	4,942,769	30,230,572
1871	191,992,780	5,394,511	30,602,023
1872	166,269,052	5,257,403	31,173,555

The amount of coffee imported into France for home consumption was 104,268,255 lbs. in 1867, 115,380,744 lbs. in 1868, 110,996,852 lbs. in 1869, and for the six months ending June 30, 1870, 59,913,571 lbs. From 1789 to 1830 a duty of 2½ cents per pound was imposed upon coffee imported into the United States. In the latter year this duty was removed, but again imposed in 1861. It varied from 3 to 5 cents per pound until July 1, 1872, when the importation of coffee was again made free.—An infusion of roasted coffee contains three constituents which differ somewhat in their action. These are tannic acid, caffeine, and empyreumatic products of the albumen and legumine of the raw berry. Only a small portion of the caffeine is destroyed in the roasting, and that is mostly converted into methylamine. (See CAFFEINE.) Coffee increases the frequency of the pulse and activity of the mind, which is often so prolonged as to prevent sleep. Large doses produce palpitation of the heart, and habitual coffee drinkers are liable to have the digestion considerably impaired. In the absence of belladonna, it may be used as an antidote in cases of poisoning by opium, a strong infusion of the burnt berry being used and given in doses according to the symptoms. It is sometimes given to relieve vomiting, particularly of a nervous character. Roasted coffee neutralizes noxious odors, and is antiseptic in a mild degree. It is best applied by first drying and crushing the raw beans, and then roasting the powder at a moderate heat to a dark brown color, when it may be sprinkled about or simply exposed on a plate where the effluvium exists. It is often adulterated (see ADULTERATION, and CHICORY), and this may be suspected when water is quickly colored by it, and the presence of chiccory or burnt sugar inferred. One of the readiest means of detecting foreign vegetable or animal matter is by using the microscope. Venetian red or native sesquioxide of iron may be detected in the ashes either by inspection or the application of chemical reagents.

COFFEE. I. A S. E. county of Georgia, bounded N. by the Ocmulgee river, S. W. by the Allapaha, and intersected by the Satilla and its branches; area, 1,000 sq. m.; pop. in 1870, 3,192, of whom 678 were colored. The surface is level and sandy. The Macon and Brunswick railroad touches the N. E. corner, and the Brunswick and Albany railroad passes through the S. part. The chief productions in 1870 were 49,022 bushels of Indian corn, 19,-

949 of oats, 45,996 of sweet potatoes, 15,845 lbs. of rice, 42,366 of wool, 261 bales of cotton, and 12,231 gallons of molasses. There were 403 horses, 3,925 milch cows, 10,384 other cattle, 16,036 sheep, and 12,779 swine. Capital, Douglas. **II.** A S. E. county of Alabama, watered by Pea river; pop. in 1870, 6,171, of whom 1,020 were colored. The former area was 900 sq. m., but portions have been taken to form Crenshaw and Geneva counties. The surface is somewhat hilly, and the soil generally poor. Pine timber grows in great abundance. The chief productions in 1870 were 121,352 bushels of Indian corn, 28,254 of sweet potatoes, 2,004 bales of cotton, 13,098 gallons of molasses, and 8,975 lbs. of rice. There were 617 horses, 2,142 milch cows, 5,346 other cattle, 4,059 sheep, and 9,433 swine. Capital, Elba. **III.** A central county of Tennessee; area, 320 sq. m.; pop. in 1870, 10,237, of whom 1,501 were colored. It has an elevated and hilly surface, and a fertile soil. It is traversed by the McMinnville and Manchester railroad. The principal productions in 1870 were 43,075 bushels of wheat, 10,226 of rye, 309,503 of Indian corn, 25,462 of oats, and 30 bales of cotton. There were 2,506 horses, 1,881 milch cows, 2,979 other cattle, 8,107 sheep, and 17,226 swine; 3 flour mills, 5 saw mills, 1 paper mill, 1 distillery, and 2 wool-carding and cloth-dressing establishments. Capital, Manchester.

COFFEY, a S. E. county of Kansas, intersected by the Neosho river; area, 576 sq. m.; pop. in 1870, 6,201. The Missouri, Kansas, and Texas railroad crosses it. The chief productions in 1870 were 47,745 bushels of wheat, 268,218 of Indian corn, 90,190 of oats, 26,879 of potatoes, 14,275 tons of hay, 140,602 lbs. of butter, and 36,702 of wool. There were 2,762 horses, 3,459 milch cows, 6,247 other cattle, 11,917 sheep, and 2,855 swine; 5 manufactories of carriages and wagons, 3 of saddlery and harness, 1 of woollen goods, 2 flour mills, and 7 saw mills. Capital, Burlington.

COFFIN, Sir **Isaac,** an English admiral, born in Boston, Mass., May 16, 1759, died at Cheltenham, Eng., July 23, 1839. He was educated at the public schools in Boston, and having entered the British navy as midshipman in 1773, under the patronage of Admiral Montagu, served in various ships on the American station, being finally attached to the Romney, flag ship of his patron, off Newfoundland. In 1778 he was appointed lieutenant, and in 1781 commander. On March 16, 1781, he acted as signal lieutenant to Admiral Arbuthnot in the action off Cape Henry, and in 1782 was present as a volunteer under Admiral Hood in the engagement between Rodney and De Grasse. In 1788, irritated at having been deprived of his commission for an informality then common in the service, he went to Brabant and gave his aid to the patriots. The sentence against him was soon reversed, and he reëntered the British navy with his former rank. In attempting to save the life of a sailor who fell overboard he received an injury which incapacitated him from active duty, and was placed in charge of the depot at Leith; thence was sent commissioner to Corsica; thence to Elba; subsequently to Lisbon as head of the naval establishment there; and in 1798, when Minorca fell into the hands of the English, he was appointed superintendent of the arsenal at Port Mahon. In 1804 he was advanced to the rank of rear admiral of the blue; next year was made a baronet; in 1808 vice admiral, and in 1814 admiral. In 1818 he was elected member of parliament for Ilchester, and retained his seat till the dissolution in 1826. His speeches were chiefly on naval affairs, and distinguished for blunt, sailor-like honesty, with a strong vein of facetiousness. He always retained a warm affection for his native city, and visited it many times. In 1826 he founded a school in Nantucket, still called by his name.

COFFIN, James Henry, an American mathematician, born in Northampton, Mass., Sept. 6, 1806, died in Easton, Pa., Feb. 6, 1873. He graduated at Amherst college in 1838, was afterward professor in Williams college till 1843, and superintended the establishment of Greylock observatory, on the mountain of that name in western Massachusetts, with the first combined self-registering aërometer and barometer. He was professor of mathematics and astronomy in Lafayette college, Easton, Pa., from 1846 till his death. He published "Solar and Lunar Eclipses," "A Discussion on the Meteoric Fire Ball," and "Winds of the Northern Hemisphere" (issued by the Smithsonian institution, 1851; enlarged and revised, 1873).

COGALNICEANO, or **Cogalnitchanu, Michael,** a Roumanian historian and statesman, born about 1806. He filled the newly established chair of history at Jassy, founded scientific, literary, and political journals, promoted the emancipation of the gypsies, and became prominent, under Prince Alexander Cuza's administration, in the legislature and as minister for Moldavia. After the union of Wallachia and Moldavia in December, 1861, he became prime minister, and was the chief promoter of the new electoral law of May 14, 1864, and of the arbitrary constitution; but he was obliged to retire shortly before the forced abdication of Cuza, Feb. 23, 1866. He was chiefly instrumental in the foundation of the university at Jassy. He has since been reëlected to the chamber, and under Prince Charles was minister of the interior from November, 1868, to Jan. 24, 1870. He has published *Histoire de la Valachie et de la Moldavie* (Berlin, 1837); *Archiva romanesca* (1841); and *Letopisitz*, a collection of Roumanian historical documents (3 vols., Jassy, 1845–'52).

COGHETTI, Francesco, an Italian painter, born in Bergamo, Oct. 4, 1804. He studied in that city under Diotti, and in Rome under Camuccini, and executed various fine altarpieces for churches in Bergamo, which led to his being employed upon paintings for the cathedral and other buildings. For the villa Torlonia at

Rome he painted the exploits of Alexander the Great, and he also embellished Prince Torlonia's villa at Castel-Gandolfo and his palace at Rome. In his frescoes in the basilica of Savona and many of his oil paintings, including the "Condemnation of St. Stephen," which procured for him an order of knighthood, he has closely imitated the old masters; and he stands at the head of a new school, which strives to revive the classical style of painting.

COGNAC, a town of France, in the department of Charente, 22 m. W. of Angoulême; pop. in 1866, 9,412. It is situated upon an eminence on the left bank of the Charente, and is well built. It enjoys a great celebrity on account of the brandy to which it has given its name. All the brandy of Charente and Charente-Inférieure is sold as Cognac, but the genuine article is made in the immediate vicinity of the town; the best second qualities are produced at Blanzac, Jarnac, Rouillac, Aigre, and Ruffec. The whole trade in brandy amounts to about 80,000,000 francs annually. The town also has a trade in cattle, sheep, grain, spirits, and truffles. An ancient castle, in which Francis I. was born, is now used for a brandy warehouse.

COGNATES, in Scotch law, collateral kindred on the mother's side, as agnates are collateral kindred on the father's side. The terms were employed in the Roman civil law somewhat differently, agnates being persons related through males only, while cognates might trace relationship through one or more female links. Thus, a brother's son was the uncle's agnate, but a sister's son was his cognate. Generally speaking, however, cognates were all who were descended from a common ancestor through a legal marriage, and the term included agnates also.

COGNIARD, Théodore, a French playwright, born April 30, 1806, died in Paris, May 25, 1872. With his surviving brother, HIPPOLYTE (born Nov. 20, 1807), he wrote hundreds of vaudevilles and fairy plays, many of which had a great run, especially *La biche aux bois.* He brought into vogue the opera bouffe. Offenbach's *Belle-Hélène, Barbe-bleue, Grande Duchesse,* and *Périchole* were first performed under his sole direction at the Variétés theatre, his brother Hippolyte having retired in 1869.

COGNOVIT, a plea in an action at law which admits the cause of action, and expresses or by implication consents that judgment may be entered up for the plaintiff. In a suit to recover damages, the plea may or may not admit the amount due. If it does, and the plaintiff accepts the admission, he may enter up judgment therefor. If it does not, there must be an assessment of damages by court or jury. A warrant of attorney for the execution of a cognovit is sometimes demanded and taken when a debt is created; and by means of it, if payment is not made, judgment may be entered up without delay.

COGSWELL, Joseph Green, LL. D., an American scholar, born at Ipswich, Mass., Sept. 27, 1786, died in Cambridge, Mass., Nov. 26, 1871. After graduating at Harvard college in 1806, he made a voyage to India as supercargo of a vessel, and on his return studied law with Fisher Ames in Dedham. He commenced the practice of law at Belfast, Maine, where he married a daughter of Gov. Gilman of New Hampshire. Her death, and a distaste for the profession, led him to abandon it, and to accept in 1814 a position as tutor at Cambridge. In 1816 he visited Europe, and joined his friends Edward Everett and George Ticknor in studies at Göttingen and other German universities, and in travelling on the continent. He remained abroad about four years, giving special attention to the principles of instruction and education, and already entertained the idea of forming a great public library in the United States. Returning home in 1820, he was appointed professor of mineralogy and geology and librarian in Harvard college. In 1823 he united with George Bancroft in founding the Round Hill school at Northampton, Mass. The plan of this institution had been suggested by observation of the best English and German preparatory schools, and during the five years that Dr. Cogswell was associate head of it, and for about the same period during which he conducted it alone, it attracted students from every part of the country, and exerted an important influence in advancing the standard of American education. After leaving Northampton he had charge of a similar institution in Raleigh, N. C.; but prior to 1839 he settled in New York city, where he became editor of the "New York Review." Being introduced by Fitz-Greene Halleck to John Jacob Astor, he soon became interested and engaged in the great work of his later years. During the closing years of Mr. Astor's life Dr. Cogswell was in daily intercourse with him, living, at his request, in his house as his friend and companion, and arranging the plans and selecting the titles of the books for the great library which it was Mr. Astor's purpose to endow. It was the unnoticed preparatory labors of many years which gave to the Astor library, so soon after the realization of its endowment, its complete and orderly development. Dr. Cogswell was appointed by Mr. Astor one of the trustees of the fund, and designated by the trustees as superintendent of the library before its opening. He made three visits to Europe, examining the principal libraries and book marts of the old world, and collecting the books for the Astor library. The character of the collection demonstrates his appreciation of the value of all branches of knowledge, and his liberal sympathy with every intellectual pursuit. He presented to the Astor library his own bibliographical collection, which was one of the largest and most valuable in this country. He had previously united with Mr. Andrew Ritchie in purchasing in Germany, and presenting to Harvard college, a cabinet of about 5,000 minerals; and

had made to the botanic garden at Cambridge a donation of nearly 4,000 very choice specimens of dried plants of central Europe, which, with the assistance of Mr. Seringe of Bern, he had collected in Switzerland. During Dr. Cogswell's active superintendency of the Astor library, he prepared a valuable alphabetical and analytical catalogue of its contents, which was published in eight large volumes, displaying his extraordinary knowledge of the history, comparative value, and significance of the books he had collected. He continued to perform the active duties of superintendent with singular industry and fidelity, until the pressure of advancing years induced him to retire in 1860. Two years later, having changed his residence to Cambridge, Mass., he resigned the office of trustee. After that time it was his habit to make annual visits of several weeks to his friends in New York. While his physical strength gradually failed, his intellectual powers remained unimpaired to the advanced age of 85, and his sparkling conversation was as interesting as in earlier years. His remains were interred in his native place, where a handsome monument is to be erected by his Round Hill pupils, to testify their affection for their old friend and instructor. He bequeathed one fourth of his moderate fortune to the Manning school of Ipswich, Mass.

COHASSET, a town of Norfolk co., Massachusetts, on the South Shore railroad, 15 m. S. E. of Boston; pop. in 1870, 2,130. It borders N. E. and E. on Massachusetts bay, and is surrounded on all other sides by Plymouth co., being separated on the west by Hingham from the main body of Norfolk co. The peninsula of Nantasket, constituting the main portion of the town of Hull, and forming the S. E. side of Boston harbor, projects N. W. from Cohasset about 5 m., and contains Nantasket beach, 4 m. in length, which is much resorted to for its beauty, fine shell fish, sea fowl, and good bathing. The coast of Cohasset is very rocky, and is noted as the site of Minot's ledge lighthouse. The Conohasset river, which anciently formed the boundary between Plymouth and Massachusetts colonies, flows through a portion of the town. In the S. W. part is a pond of 90 acres, abounding in fresh-water fish. The situation of the town is delightful and romantic, and its ready access from Boston has rendered it a popular summer resort. The inhabitants are chiefly engaged in mackerel fishing and the coasting trade. Cohasset until 1770 formed a part of Hingham, and was called Conohasset, an Indian name signifying a fishing promontory.

COHESION, that kind of attraction by which the particles of bodies are held together, as the molecules of water, of iron, or of stone. It is manifested in a high degree in solids, less in liquids, and but very little or not at all in gases. The molecules of which bodies are composed would seem, from the various phenomena observed in nature and in experiments, to be under the influence of two opposing forces, which under varying conditions alternate with each other in preponderance. One of these forces is molecular attraction, and the other is molecular repulsion. The first is exerted only at inappreciably small distances, but the laws by which it is governed are not known. Repulsion is exerted at greater distances, and is principally controlled by the action of heat, increasing as the heat increases, the abstraction or addition of this agent being usually sufficient to cause matter to assume either the solid, liquid, or gaseous form. Molecular attraction manifests itself in three ways, by cohesion, by adhesion, and by chemical affinity. The degree of cohesion in the same solid depends much upon the arrangement of its particles, as may be observed in the different degrees of hardness between tempered and untempered steel, and the difference in tenacity of metals in ingots or in hammered or rolled plates. The distinction between cohesion and adhesion is not always easily to be established. Adhesion is commonly spoken of as existing between the particles of dissimilar bodies, but it is more accurately defined by calling it that molecular force which holds two distinct bodies together, whether they are of the same substance or not. If two pieces of lead have plane surfaces cut upon them, and these are firmly pressed together, they will continue to be so held by the force of adhesion (independently of atmospheric pressure), and not of cohesion, because that term cannot strictly be applied except when such a union has taken place as to render the structure continuous between the original bodies. To consider, also, cohesion as only capable of existing between particles of the same kind, would lead to conclusions that cannot well be maintained, because in an alloy of two or more metals, even when they are not mingled in the proportions of their atomic weights, it seems proper to consider the particles as being held together by the force of cohesion. As has been intimated, the laws which govern molecular attraction are so imperfectly understood that the relations between cohesion, adhesion, and chemical affinity cannot be stated. The last named force is exerted between atoms or molecules of matter which are not of the same kind; it is manifested with more intensity than is observed in the phenomena of cohesion and adhesion, and is also followed by a more intimate union of the particles, by which the formation of a new body, unlike in its physical properties either of those of which it is composed, is accomplished. Heat exerts a remarkable influence upon these forces, and indicates the differences which exist in their nature. Adhesion does not seem to be so uniformly diminished by its action as cohesion, for the adhesion between substances is often increased thereby, while cohesion is constantly diminished. Chemical affinity is also generally increased with the increase of heat, certainly while union is taking

place, whatever may be its effect upon the compound after union; but that heat has the power of diminishing the affinity with which the atoms of a compound are held together is shown by its decomposing action on some of the metallic oxides, as those of silver and mercury. The manifestations of chemical affinity between two uniting bodies are no doubt often heightened by the application of heat, in consequence of its diminishing the cohesion or increasing the repulsion between the molecules of each of such uniting bodies. The conversion of water into steam is an example of the neutralization of the force of cohesion by the application of heat, without any appreciable diminution of the force of chemical affinity. The cohesive force of the atoms or the molecules of bodies depends on their distance from one another, decreasing as the distance increases, and disappearing entirely when that becomes sensible; but the law by which the decrease takes place is not known. It has been questioned, however, whether molecular attraction may not follow the law of attraction of gravitation, varying inversely as the squares of the distance; or, in other words, whether the two are not modifications of the same force. Under this assumption the explanation of the cessation of cohesive attraction at sensible distances is furnished by the obvious fact that any sensible distance is almost infinitely so much greater than the distance between the centres of the adjacent atoms or molecules of a solid or liquid, that the difference in the attractive forces becomes practically infinite. The question as to the amount of cohesive force which exists between the molecules of liquids is attended with difficulty. The fact that water will boil in a vacuum at a low temperature might suggest the inference that there exists no positive cohesive force between its particles; but the formation of spherical drops of water is opposed to such a conclusion. Again, when a liquid boils in the open air it is usually considered that the repulsion between the molecules is sufficient to overcome the pressure of the atmosphere, and therefore it would appear as if there were no cohesive attraction between them; but the irregularity with which ebullition takes place under certain circumstances, as when the air which is usually contained in water has been expelled, would seem to confirm the opinion that in reality there are present both attractive and repulsive forces, which alternate in predominance; the attractive force predominating when the molecules are within certain distances, especially when they are comparatively at rest, and the repulsive force predominating when the distances are deranged by motion, or increased by the intrusion of particles of vapor or air. (See Boiling Point.) Moreover, water may be considerably reduced in temperature below its freezing point without congelation taking place, when a jar given to the vessel, or a pebble or crystal dropped into it, will cause the immediate manifestation of intense cohesive force and the formation of ice. It would therefore appear that the molecules of a liquid may have slight cohesive attraction for each other, even when the temperature is sufficient to cause repulsion between the particles of its vapor; and also that when the freezing point is reached, the cohesion may not be sensibly increased until some disturbing cause operates. The modifications of cohesive attraction are the cause of those different properties of bodies which are called tenacity, hardness, ductility, and elasticity, and will be treated under their appropriate heads, and in the article Strength of Materials.

COHOES, a city of Albany co., New York, on the right bank of the Mohawk river, at its confluence with the Hudson, and on the Erie canal near its junction with the Champlain canal, 8 m. N. of Albany; pop. in 1850, 4,229; in 1860, 8,800; and in 1870, 15,357, of whom 7,947 were natives and 7,410 foreigners. Cohoes falls, 70 ft. in perpendicular height, and remarkable for their picturesque beauty, are just above the city. The Albany division of the Rensselaer and Saratoga railroad and the Troy and Schenectady (New York Central) railroad pass through Cohoes, and horse cars run to Troy. Among the public buildings, the Roman Catholic church of St. Bernard, built of brick, with high towers, is particularly worthy of mention. It cost $100,000, is finely decorated within, and is furnished with a chime of bells. The Episcopal church of St. John, with the parsonage connected, is of Schenectady blue stone, and cost $75,000. Each of the stained windows illustrates one of the figures in Revelations; and being formed of hammered or rolled glass, by which the light is reflected rather than transmitted, they possess great brilliancy and depth of color.—Cohoes derives its importance from the extent of its manufactures, ample water power being supplied by the falls. The Cohoes company, organized in 1826, and having a capital of $500,000, owns the entire water power of the river from half a mile above the falls to a mile below, the total fall in this distance being 120 ft. A stone dam, 1,443 ft. long, was built in 1865 above the falls, at a cost of $180,000. This structure was preceded by a series of wooden dams, the first of which was erected in 1831. The water is used in five successive canals, having falls of 18 to 25 ft.; and again from the level of the state dam below the falls, which was built to supply the canal at this point. The water power is leased by the company at the rate of $20 a year for each horse power, including the necessary land. The Harmony company, having a capital of $2,000,000, owns all the cotton factories in Cohoes, and its mills, comprising six distinct factories, are the largest in the city, the most recent containing 2,700 looms and 130,000 spindles. One of these mills (the first in the United States) has lately been supplied with machinery for

making cotton printing cloths of a yard in width, having the same texture as those of the English mills. In 1871, 4,400 looms and 230,000 spindles were in operation in all the mills; the number of hands was 3,100, of whom two thirds were women and girls; number of water wheels, 15, of 3,000 horse power. To July 1 of that year $1,750,000 had been expended for machinery and $2,275,000 for real estate. The average monthly product is 5,500,000 yards of cloth. In 1870, 52,342,000 yards were manufactured, worth $4,053,254; amount of cotton consumed, 9,012,000 lbs., worth $2,545,887; wages paid, $855,350. The company have recently erected a large brick depot on the New York Central railroad, capable of containing 15,000 bales of cotton. They own large storehouses, and 700 or 800 dwellings occupied by their employees, which are situated on wide streets, regularly laid out, well paved, lighted with gas, and bordered with trees. Knit goods, including undershirts, drawers, and stockings, are a prominent feature of the industry of Cohoes, which produces a third of all the hosiery manufactured in the country. In 1870 there were 18 knitting mills, with an aggregate capital of $1,157,000, requiring 1,066 horse power; amount of wages paid, $535,362; value of materials used, 1,394,948; value of products, $2,345,226. The first knitting mill in the United States was established here in 1832, but it is only within a few years that the business has assumed its present proportions. The Cohoes rolling mill occupies an area of 500 by 160 ft., and produces shafting, bar and band iron, and a superior quality of axe, pick, and mattock poles, as well as an excellent iron for tool makers, which is said to have superseded to some extent the Norway iron formerly used. In 1870 this establishment produced 2,500 tons of band iron and 8,000 axe poles, of the aggregate value of $299,000. There are two axe factories, producing articles to the value of $380,000. The Empire pin company has a capital of $25,000, and in 1870 manufactured 175,000 packages of pins, worth $38,359. A new factory 40 by 100 ft., and six stories high, has recently been erected by the company. The Cohoes knitting-needle factory in 1870 produced 2,804,000 dozen needles, worth $14,450. Besides the establishments mentioned, there are two foundries, three machine shops, a planing mill, a sawing and bevelling establishment, a paper mill, and manufactories of straw board, bedsteads, and tape. The city contains two banks, with an aggregate capital of $350,000. It is divided into four wards, and is governed by a mayor, who, together with the board of aldermen, consisting of two members from each ward, constitute the common council. The public schools, under the control of two commissioners in each ward, are 22 in number, including a high school, and have 28 teachers and 1,430 pupils. There are night schools for the operatives. The Harmony company supports a Sunday school, which has an average attendance of 420 pupils, and is furnished with an elegant school room, a library of 1,800 volumes, and a well appointed reading room. There are also several parish schools, and two weekly newspapers. There are 7 churches, of which 2 are Roman Catholic. One of the Catholic churches is supported by French Canadians, who are largely represented among the mill hands.—Previous to 1811 the site of Cohoes was a barren waste. In that year the Cohoes manufacturing company was incorporated, "for the purpose of manufacturing cotton, woollen, and linen goods, bar iron, nail rods, hoop iron, and ironmongery;" but it failed about 15 years later. In 1831 the population of the neighborhood did not exceed 150. It was incorporated as a village in 1848, and as a city in 1869.

COHORT, in Roman antiquity, a division of an army, comprising three maniples or six centuries, and being the tenth part of a legion. It contained from 400 to 600 men, according to the number in the legion. There was one cohort (*cohors milliaria*) which had precedence over the others, and consisted of 1,000 select men. It marched in the van, carried the eagle, and was commanded by a tribune of approved valor. Marius, who during the wars with the Cimbri introduced tactical reforms into the Roman army, was the first who organized the legion into ten cohorts. The prætorian cohorts were the special guards successively of the generals, triumvirs, and emperors, and exerted great influence during the decline of the empire. Augustus organized nine of them, which he retained as a standing army in the vicinity of Rome, under the command of two prefects. Tiberius placed them under a single prefect, and gave them a fortified camp within the walls. (See PRÆTORIANS.)—When Napoleon organized the legion of honor, he divided it into 16 cohorts.

COHOSH, an Indian name applied to *cimicifuga racemosa* (Gray), or black snakeroot, a plant of the order *ranunculaceæ*. Two varieties of *actæa spicata* are known respectively as red and white cohosh. The black snakeroot has a perennial root and herbaceous stem, which rises to the height of 4 to 8 ft., and grows in shady woods from Canada to Florida. Its physiological action has not been well determined, but it is regarded as a stimulant tonic, and is said to diminish



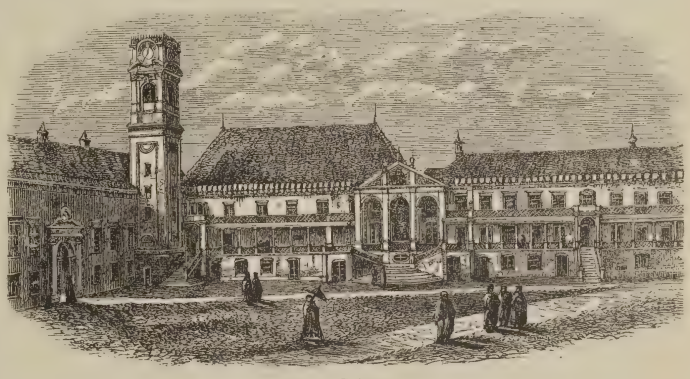
Cohosh (Actæa spicata).

both the force and frequency of the pulse. It has been used in a great variety of diseases, most frequently perhaps in rheumatism and cholera, and has had a reputation in snake bites. Cimicifugine is a name improperly applied to an impure resin derived from this plant.—The name cohosh, or blue cohosh, is also given to *caulophyllum thalictroides* or pappoose root.

COIF, a head dress. In the middle ages a defensive covering for the head was called by this name, but it was applied more particularly to the covering for the shaven crown of the priests, and to the cap of the advocates. A barrister becoming a sergeant is said to be advanced to the degree of the coif, and takes position accordingly.

COIMBATORE, or **Coimbatoor. I.** A district of British India, in the presidency of Madras, between lat. 10° 14′ and 12° 19′ N., and lon. 76° 36′ and 78° 16′ E.; area, 8,099 sq. m.; pop. in 1871, 1,754,705. The district is enclosed on the north by the group of mountains bordering the table land of Mysore, and on the south by the Pulnai or Vurragiri mountains, and by the Animali range. The principal rivers are the Cavery, Bhowani, Noyel, and Ambrawutty. Although the climate is rendered insalubrious by several extensive morasses, it is better than that of the maritime parts of the Carnatic. Elephants abound. The vegetable productions consist mainly of dry grains. Among the productions are gram, various sorts of panic and of millet, turmeric, and tobacco. Teak and other valuable timber is produced, as well as castor oil and cotton; the last two articles form the principal exports. Experiments have been made with American cotton and Mauritius sugar, proving the fitness of the soil for their cultivation. The language spoken is the Tamil. **II.** The capital of the district, a well built town, occupying an elevated and dry situation on the banks of the Noyel, on the railway from Madras to Beypoor, 268 m. S. W. of Madras, and 600 m. S. S. E. of Bombay; pop. about 20,000. It contains a mosque built by Tippoo Sultan, who made this place one of his principal military stations. About 2 m. from the town, at Peruru, is a Hindoo temple, called Mail Chittumbra. It is roughly constructed, but covered with a profusion of Hindoo ornaments. Some time ago an ancient tumulus near Coimbatore was opened, and found to contain various weapons and other articles, such as were formerly in use among the Romans. The town was twice taken by the British: once in 1783, and again in 1790. A detachment of native infantry is stationed here. The European quarter is eastward and detached from the town.

COIMBRA, a city of Portugal, capital of the province of Beira, 120 m. N. N. E. of Lisbon; pop. about 19,000. It is situated on the river Mondego, in the midst of a mountainous but fertile and well cultivated tract. Its principal public building is the university, the only one in Portugal, founded at Lisbon in 1291, and transferred hither in 1308. It consists of 18 colleges, is divided into 6 faculties, employs 33 professors in ordinary and 22 assistant professors, has a library of over 30,000 volumes, and is attended by about 1,500 students; it is highly endowed, the courses of study are long, and the annual examinations are said to be severe. Coimbra is the seat of a bishopric, and has the wealthy Augustinian convent of Santa Cruz, with its immense Gothic structure. There are also a college of arts belonging to the Jesuits, a cathedral, eight churches, and several monasteries. On a hill near Coimbra is the splendid convent and church of the nuns of Santa Clara,



Plaza, Coimbra.

and in the valley of the Mondego opposite to it is the Quinta das Lagrimas, famed in poetry as the scene where Ines de Castro was slain. Seven kings of Portugal were born and four died here, and several princes derived their title from the town. Coimbra is said to be the Conimbrica of the Romans. It sustained many sieges in mediæval times.

COIN, a town of Andalusia, Spain, in the province and 20 m. W. of the city of Malaga; pop. about 8,500. It is well built, has good streets and squares, and a promenade with a fountain. Besides two large churches, there are several chapels and convents, an episcopal palace, and a number of schools. In the vicinity are pleasure grounds and gardens, and in the adjoining hills are marble quarries and great quantities of jasper. Paper, linen, woollens, and other articles are manufactured, and the principal articles of trade are cattle, cereals, fruits, and wine. An annual fair is held in August.

COINS (Fr. *coin*, a die or stamp), metallic money; specie; pieces of metal, generally gold,

silver, or copper, bearing certain marks or devices to indicate their origin and value, and designed to be used as money. How early gold and silver began to be used as money, history does not inform us. Nearly 2,000 years before Christ Abraham returned from Egypt "very rich in cattle, in silver, and in gold;" and in his purchase of the cave of Machpelah, he weighed out the consideration agreed upon, "400 shekels of silver, current money with the merchant." The use of the metals, however, in the form of wedges or bars, though an immense improvement upon simple barter, or the use of cattle, grain, and other commodities, was still attended with inconveniences. At every transaction the precise weight of metal must be computed; a hammer and chisel must be at hand to cut it off, and a balance to weigh it. The fineness of the metal was also to be ascertained. All these troubles were at length ended by the expedient of shaping the metals into pieces of convenient size, and stamping upon each its exact value. He who first did this was the inventor of coins; but history is silent respecting his name, his country, or the date of his invention. Homer, although he speaks of workers in metals, makes no mention of coined money. Herodotus says that the Lydians, as far as he knew, were the first who struck money; and although the oldest specimens of coin now extant have usually been supposed to be Grecian, there are reasons for thinking with Herodotus that the invention was Asiatic. Coins were probably used as early as the 8th century B. C., and by the 4th century money was found throughout the civilized world, every state having its proper coinage.—Most of the commoner metals have in turn been used for making coins. The early coins of Asia Minor were of electrum, a mixture of gold and silver, in the proportion of three of the former to one of the latter. Lycurgus banished gold and silver, and made the money of Sparta of iron, $100 worth of which required a cart and two oxen to remove it. Copper formed the early money of the Romans; and when Cæsar landed in Britain, coins of brass and iron were found in use. Tin was coined by Charles II., and James II. even resorted to gun metal and pewter. At the present day, however, the precious metals, gold and silver, with copper for the lowest denomination, are almost universally employed as the material of coins. Coins of platinum were formerly struck in Russia, but its use for this purpose has recently been abandoned. Gold and silver in a state of purity are soft and ductile; and coins made of these metals would suffer loss and injury to a certain degree by abrasion, if there were no means of hardening them. The addition of a small quantity of alloy is found to produce this effect, without materially impairing the ductility or beauty of the metals. Although in a few countries coins are issued of almost absolute purity, such as the gold sequins of Tuscany and the silver florins of Hanover, yet for the most part the coins of the world consist not of pure gold and silver, but of these metals alloyed with some other, generally copper, in definite proportions fixed by law. The difficulty of ridding gold entirely of the silver with which it is always found combined in nature has led in some countries to the practice of leaving enough silver to serve for alloy. This is the case in Spanish America, as is indicated by the paleness of their doubloons. In some European countries the silver is entirely removed, and copper introduced for alloy, giving to the coins a reddish cast. In the United States the practice of the mint is to imitate the true color of gold in the coinage, by using an alloy of about $\frac{9}{10}$ copper and $\frac{1}{10}$ silver; that is, in 1,000 oz. of standard gold there are 900 oz. pure gold, 10 oz. silver, and 90 oz. copper.—The term standard, as applied to coins, means strictly the conditions of fineness and weight to which they are required by law to conform. Thus, in the United States, the gold coins must be made of metal consisting of $\frac{900}{1000}$ pure gold and $\frac{100}{1000}$ alloy; in other words, they must be $\frac{9}{10}$ fine. This is the standard fineness, and gold of this quality is called standard gold. The weight of such gold required by law in each gold coin is its standard weight. Thus in the eagle there must be 258 grains. In estimating the value of coins, it is the quantity of fine metal contained in them which is considered; the alloy goes for nothing. The practice of the world is not uniform in regard to standard fineness of coins; some countries issuing coins of as low fineness as 250 thousandths, and others aiming at absolute purity. Great Britain still retains the old proportion of $\frac{1}{12}$ alloy; while in the United States, France, Spain, Belgium, and some other countries, the decimal proportion of $\frac{1}{10}$ alloy has been adopted. Different modes of expressing the fineness of coins and bullion prevail in different countries. Where the decimal system of notation is employed, it is expressed in thousandths. Thus the standard fineness of $\frac{9}{10}$ would be written $\frac{900}{1000}$, or simply ·900; and bullion containing three fourths pure metal would be said to be ·750 fine. In Great Britain two systems prevail, one for gold and one for silver. The fineness of gold is expressed in carats, absolute purity being 24 carats fine. The standard fineness of British gold coins is 22 carats, which is equivalent to $\frac{11}{12}$, or $916\frac{2}{3}$ thousandths; so that if a given weight of American gold coin is worth $54, the same weight of British coin is worth $55. For the purpose of expressing minute degrees of fineness in bullion, the carat is divided into four carat grains, and these again into quarters. At the British mint, assays are carried to the half quarter, or the $\frac{1}{32}$ part of the carat. In this system the United States standard of $\frac{900}{1000}$ would be expressed $21\frac{9}{32}$ carats. The fineness of silver is estimated by stating the number of ounces of fine silver in a pound troy of the metal. Thus pure silver is 12 fine; and English silver coins are $11\frac{1}{10}$ fine, because in a pound troy of

standard silver the law requires $11\frac{1}{10}$ oz. pure silver and $\frac{9}{10}$ of an oz. alloy. Thus it will be seen that while the British standard for gold coins is $916\frac{2}{3}$ thousandths, that of silver coin is 925 thousandths.—Coins are generally made flat, circular, and thin. By being flattened they receive better impressions, and are conveniently handled and piled. The circular form simplifies the process of fabrication, diminishes the abrasion to which the coins are subjected in circulation, and fits them for being carried in the pocket. Though the circular form was aimed at in ancient coinage, it was not till the 7th or 8th century that a true circle was attained. This is effected by striking the coin in a ring or collar. The exceptions to the circular form are not numerous. We have, however, the square ducat of Nuremberg, the square rupees of the Mogul empire, the parallelograms of Japan, the octagonal pieces of Assam, and the $50 octagons which were formerly struck in California. The thickness of coins is generally proportioned to their diameter, though in this particular there is great variety. The size of coins is also exceedingly variable. In the United States silver coins range from the three-cent piece to the dollar, or from $11\frac{1}{2}$ grains to $412\frac{1}{2}$ in weight, and from about $\frac{1}{2}$ inch to $1\frac{1}{2}$ inch diameter. Gold coins range from the dollar of $25\frac{8}{10}$ grains to the double eagle of 516 grains. The cent coin (copper and nickel), issued under the act of 1857, is about three fourths of an inch in diameter, and weighs 72 grains, while the bronze cent, under the act of 1864, weighs only 48 grains, but retains the same diameter.—The impressions upon coins present an endless variety. In monarchical countries the obverse of the coin usually bears the likeness of the reigning sovereign, and from this circumstance that side of the coin is in common parlance called the head. In republics it is usual to substitute some device emblematic of liberty. This is often a female figure, or head, with a *pileus*, or Roman liberty cap. The date is also placed upon the obverse in coins of the United States. The reverse of a coin commonly exhibits in the centre the national shield, or the denomination of the piece surrounded by a wreath. Running round the coin near the border, there is usually inscribed the name of the country in which it was struck. It is customary also in countries having more than one mint to distinguish the coinage of each by a letter or monogram. The several branches of the mint of the United States, at Charlotte, Dahlonega, New Orleans, and San Francisco, used to employ for this purpose the initials C., D., O., and S., respectively, coins from the mint at Philadelphia having no mark; but since the civil war no coinage has been executed at Charlotte, Dahlonega, or New Orleans, and the mints at the last two places have been discontinued by the coinage act of 1873, that at Charlotte being retained as an assay office only. In the United States the power to coin money is vested by the constitution in congress, and is prohibited to the separate states; and yet individual citizens are left perfectly free to coin money, provided only that the coins thus made be not in "resemblance or similitude" of the gold or silver coins issued from the mint. In the case of copper coins, however, in addition to the penalties of counterfeiting, the offering or receiving any other copper coin than the cent and half cent is prohibited by fine and forfeiture. Very large amounts of private gold coins have been struck and extensively circulated in different parts of the country. Such were the coins issued by Reid of Georgia, the Bechtlers of North Carolina, the Mormons in Utah, and several private mints in California.—The earliest coinage for America is said to have been made in 1612 for the Virginia company, at the Somers islands, now called Bermudas. The coin was of brass, with the legend "Sommer Island," and a "hogge on one side, in memory of the abundance of hogges which were found on their first landing." On the reverse was a ship under sail firing a gun. As early as 1645 the assembly of Virginia, "having maturely weighed and considered how advantageous a quoine current would be to this collony, and the great wants and miseries which do daily happen unto it by the sole dependency upon tobacco," provided by law for the coinage of copper pieces of 2*d.*, 3*d.*, 6*d.*, and 9*d.*; but this law was never carried into effect. The earliest colonial coinage was in Massachusetts, in pursuance of an order of the general court, passed May 27, 1652, which established "a mint howse" at Boston. The order required the coinage of "12 pence, 6 pence, and 3 pence pieces, which shall be for forme flatt, and stamped on the one side with N. E., and on the other side with XII*d.*, VI*d.*, and III*d.*, according to the value of each peece." These coins were to be of the fineness of "new sterling English money," and every shilling was "to weigh threepenny troy weight, and lesser peeces proportionably." They were soon after in circulation; but owing to the excessive plainness of their finish, they were found to be greatly exposed to "washing and clipping." To remedy this, the general court, on Oct. 19 of the same year, ordered a new die, and required that "henceforth both shillings and smaller peeces shall have a double ring on either side, with this inscription, (Massachusetts), and a tree in the centre, on the one side, and New England and the date of the year on the other side." In 1662 a twopenny piece was added to the series. These coins are now known as the "pine tree shilling," &c. The Massachusetts mint existed about 34 years; but all the coins issued bear only the dates 1652 and 1662, the same dies having probably done service throughout the period. In the reign of William and Mary copper coins were struck in England for New England and Carolina, having on the obverse an elephant, and on the reverse respectively, "God preserve New

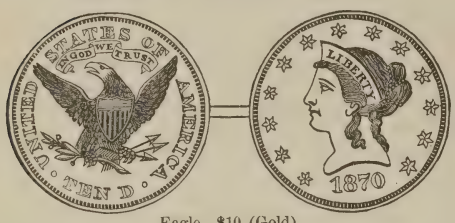
England, 1694," and "God preserve Carolina and the lords proprietors, 1694." As early as 1662 an act was passed by the provincial assembly of Maryland "for the getting up of a mint within the province." It is probable, however, that the mint was never established; but shillings, sixpences, and fourpences of silver were made in England under the direction of Lord Baltimore, and sent to the colony, having on the obverse a profile bust of Lord Baltimore, with the legend *Cæcilius: Dns: Terræ: Mariæ:* &c.; reverse, an escutcheon with family arms, value of the piece, and the legend, *Crescite: et: Multiplicamini.* There were also copper halfpennies with the same obverse, and having on the reverse the legend, *Denarivm: Terræ-Mariæ*, and in the centre two flags on a ducal coronet. New Hampshire legislated for a copper coinage in 1766; but, as in the case of Virginia and Maryland, nothing more was done. In the reign of George I. an attempt was made to introduce into general circulation in the colonies coins made of Bath metal or pinchbeck, having on the obverse the head of that king and the legend, *Georgius D. G. Mag. Bri. et Hib. Rex;* and on the reverse a large double rose with the legend *Rosa Americana, Utile Dulci*, 1722 and 1723, in the last the rose being crowned. These coins were made by William Wood, under a royal patent "for coining small money for the English plantations, in pursuance of which he had the conscience to make 13 shillings out of a pound of brass." This "Wood's money," however, was vehemently rejected both here and in Ireland, where strenuous efforts were made to introduce it. From 1778 to 1787 the power of coinage was exercised not only by the confederation in congress, but also by several of the individual states. In Vermont a mint was established by legislative authority in 1785, in the town of Rupert, and copper cents were issued of the following description: Obverse, a sun rising from behind hills, and plough in the foreground, with the legend, *Vermontensium Res Publica*, 1786; reverse, a radiated eye surrounded by 13 stars, with the legend, *Quarta Decima Stella.* Some of the cents of 1786 and all those of 1787–'8 have on the obverse a head, with the legend, *Auctoritate Vermontensium*, and on the reverse a woman, with the legend, *Inde. Et Lib.* Connecticut followed the example of Vermont, and in the same year, 1785, authorized the establishment of a mint at New Haven, and copper coins were issued, weighing six pennyweights, and having on the obverse a head with the words *Auctori. Connec:* reverse, a female figure holding an olive branch, with the legend, *Inde. Et Lib.* 1785. This mint continued in operation three years. New Jersey authorized a copper coinage in 1786. The parties procuring the patent established two mints, one at a place known as Solitude, about two miles west of Morristown, and the other at Elizabeth. The coins are thus described: Obverse, a horse's head with a plough beneath—legend, *Nova Cæsarea*, 1786, &c.; reverse, a shield—legend, *E Pluribus Unum.* Massachusetts, by act of Oct. 17, 1786, directed the establishment of a mint, and the following year the necessary works were erected on Boston neck and at Dedham. In 1788 cents and half cents were issued, exhibiting on the obverse the American eagle with arrows in the right talon and an olive branch in the left, a shield on its breast bearing the word "Cent"—legend, "Massachusetts, 1788;" reverse, an Indian holding a bow and arrow—legend, "Commonwealth" and a star.—As early as January, 1782, a plan for an American coinage was submitted to congress by Robert Morris, the head of the finance department, the authorship of which is, however, claimed for Gouverneur Morris. In February following congress approved the establishment of a mint, but no further action was taken till 1785, when congress adopted the plan of a national coinage presented by Thomas Jefferson, and in 1786 decided upon the following names and characters of the coins: An eagle, to contain $246\frac{2}{10}\frac{6}{0}\frac{3}{0}$ grs. of fine gold, value $10, and half eagle in proportion, both to be stamped with the American eagle; a dollar, to contain $375\frac{6}{1}\frac{4}{0}\frac{}{0}$ grs. of fine silver; a half dollar, double dime, and dime, in proportion. The copper coins were a cent and half cent. In October, 1786, congress framed an ordinance for the establishment of a mint; but nothing further was done till 1787, when the board of treasury, by authority of congress, contracted with Mr. James Jarvis for 300 tons of copper coin of the federal standard. These cents were coined at the New Haven mint, and are of the following description: On one side, 13 circles linked together, a small circle in the middle with the words "United States" around it, and in the centre the words, "We are one;" on the other side, a sun-dial with the sun above it, and *Fugio*, 1787, on opposite sides, and below the dial, "Mind Your Business." A few of these pieces are said to have been struck in the Vermont mint at Rupert. On April 2, 1792, a code of laws was enacted for the establishment and regulation of the mint, under which, with slight amendments, the coinage was executed for 42 years. The denominations of coin and their rates were as follows: Gold, the eagle of $10, to weigh 270 grs., the half eagle and quarter eagle in proportion, all of the fineness of 22 carats, or $916\frac{2}{3}$ thousandths; silver, the dollar of 100 cents, to weigh 416 grs., the half dollar, quarter dollar, dime of 10 cents, and half dime in proportion, the fineness to be 1,485 parts fine in 1,664, or 892·4 thousandths; copper, the cent of 264 grs., the half cent in proportion. The same act declared the dollar to be the unit of federal money, and directed that all public accounts should be kept in conformity to the decimal system of coins above described. After the act of 1792 the following changes in the currency occurred: Jan. 14, 1793, the cent reduced to 208 grs., and half

cent in proportion; Jan. 26, 1796, cent reduced to 168 grs., and half cent in proportion; June 28, 1834, the weight of the eagle reduced to 258 grs., and the parts in proportion, of which 232 grs. were to be fine gold, equal to a fineness of $899\frac{225}{1000}$ thousandths, being an increase of $6\frac{68}{100}$ per cent. on the former value of gold as compared with silver, which remained unchanged. The disadvantages of the complex standards both of gold and silver determined Mr. R. M. Patterson, the director of the mint, to attempt an improvement. He accordingly drew up a well considered code of mint laws, which was enacted by congress, Jan. 18, 1837, by which the French standard of fineness of $\frac{900}{1000}$, for both gold and silver, was adopted. The weight of the gold coins remained unchanged, but the dollar was reduced to $412\frac{1}{2}$ grs., and the lesser silver coins in proportion. By the act of March 3, 1849, there were added to the series of gold coins the double eagle and the dollar; and by act of Feb. 21, 1853, the three-dollar piece. By act of March 3, 1851, there was added to the silver coins a three-cent piece (a legal tender for sums not exceeding 30 cents), of the fineness of $\frac{750}{1000}$, and $12\frac{3}{8}$ grs. in weight, at which rates it continued to be coined till April 1, 1853, when its fineness was raised to ·900, and its weight reduced to $\frac{3}{50}$ of the half dollar, or $11\frac{52}{100}$ grs. At this date also, in pursuance of the act of Feb. 21, 1853, an important change was effected in the silver coinage. The preëxisting laws had made both gold and silver coins (except the three-cent piece) a legal tender for any amount. At the ratio of silver to gold of 16 to 1, silver was undervalued in the United States as compared with Europe, and our silver coins were largely exported. The remedy provided was a seigniorage upon the silver coins, and making gold alone the legal tender. The weight of the half dollar was reduced from $206\frac{1}{4}$ grs. to 192 grs., and the smaller coins in proportion. The mint ceased coining silver for individuals, but purchased silver at the market price and made the coins for government account—a policy with respect to silver which was adopted in England as early as 1817. The effect of this change was to give to the silver coin of the country a current value sufficiently above its market price as bullion to prevent its exportation, and at the same time to make silver money subsidiary to gold. It is a legal tender now only to the extent of $5. The price at which the mint buys silver is fixed from time to time according to its value in the market, and in 1872 was $1 $22\frac{1}{2}$ per standard ounce (·900 fine). The silver dollar was not included in this change. It was still a legal tender for all amounts, and its weight continued at $412\frac{1}{2}$ grs., while that of two half dollars, or an equivalent sum in smaller coins, was 384 grs. It was therefore intrinsically worth $7\frac{42}{100}$ per cent. more than a dollar's worth of the other silver coins; but as compared with their current value, only about $4\frac{1}{2}$ per cent. more. A further change in the currency was effected by the act of Feb. 21, 1857, by which the copper cent and half cent were discontinued, and a new cent, composed of 88 per cent. of copper and 12 per cent. of nickel, and weighing 72 grs., was substituted; which continued to be coined until the act of April 22, 1864, provided for the coinage of the bronze cent, consisting of 95 per cent. of copper and 5 per cent. of tin and zinc, and weighing 48 grs. The same act authorized the coinage of two-cent pieces weighing 96 grs.; and by the act of March 3, 1865, a three-cent coin, three fourths copper and one fourth nickel, weighing 30 grs., was authorized. The act of May 16, 1866, provided for the coinage of a five-cent piece, three fourths copper and one fourth nickel, weighing 77·16 grs. The one- and two-cent coins were made a legal tender only to the amount of 4 cents, while the three-cent and five-cent pieces were a legal tender for sums not exceeding 60 cents and $1 respectively. The act of Feb. 12, 1873, known as the coinage act of 1873, prepared under the supervision of John Jay Knox, comptroller of the currency, and the passage of which was largely due to his exertions, has consolidated the regulations governing the coinage of the United States. Under this act the fineness of all gold and silver coins is to be ·900. The alloy of the silver coins consists of copper; the alloy of the gold coins is copper, or copper and silver, the silver in no case to exceed one tenth of the whole alloy. The gold coins are a one-dollar piece, "which, at the standard weight of 25·8 grs., shall be the unit of value;" a quarter eagle, or two-and-a-half-dollar piece, 64·5 grs.; a three-dollar piece, 77·4 grs.; a half eagle, or five-dollar piece, 129 grs.; an eagle, or ten-dollar piece, 258 grs.; and a double eagle, or twenty-dollar piece, 516 grs. These coins are a legal tender to any amount. The silver coins are a "trade dollar," weighing 420 grs.; a half dollar, or fifty-cent piece, $12\frac{1}{2}$ grams, or 192·9 grs.; a quarter dollar, or twenty-five-cent piece, and a dime, or ten-cent piece, respectively one half and one fifth the weight of the half dollar. These coins are a "legal tender at their nominal value for any amount not exceeding five dollars in any one payment." The trade dollar is intended for the convenience of commerce with China and Japan; while the half dollar, being half the weight of the five-franc silver coin of France, Belgium, and Switzerland, of the five-lire silver coin of Italy, the five-peseta silver coin of Spain, the five-drachma silver coin of Greece, and having the same weight as the new silver florin of Austria, is a step in the direction of international coinage. The minor coins are a five-cent and a three-cent piece, three fourths copper and one fourth nickel, weighing respectively 77·16 and 30 grs., and a one-cent piece, 95 per cent. copper and 5 per cent. tin and zinc, weighing 48 grs., which are a "legal tender at their nominal value for any amount not exceeding 25 cents in any one payment." The issuing of

COINS OF THE UNITED STATES.



Double Eagle—$20 (Gold).



Eagle—$10 (Gold).



Half Dollar—50 cents (Silver).



Half Eagle—$5 (Gold).



Quarter Eagle—$2.50 (Gold).



Quarter Dollar—25 cents (Silver).



Dime—10 cents (Silver).

COINS OF GREAT BRITAIN.



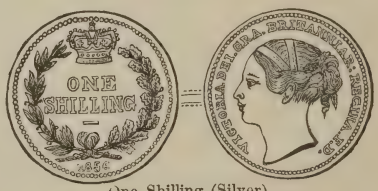
Sovereign (Gold).



Half Crown (Silver).



Half Sovereign (Gold).

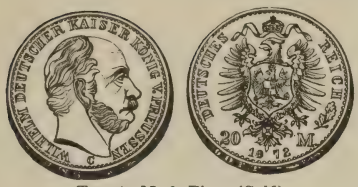


One Shilling (Silver).

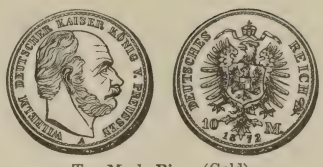


Sixpence (Silver).

COINS OF THE GERMAN EMPIRE.



Twenty-Mark Piece (Gold).



Ten-Mark Piece (Gold).

COINS OF PRUSSIA.



Thaler (Silver).

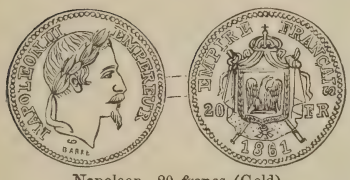


Friedrichs d'Or (Gold).



Silbergroschen (Silver).

COINS OF FRANCE.



Napoleon—20 francs (Gold).



Ten-Franc Piece (Gold).



One Franc (Silver).



Five-Franc Piece of the Republic (Silver).

COIN OF SPAIN.



One Hundred Reales, Isabella II. (Gold).

COIN OF MEXICO.

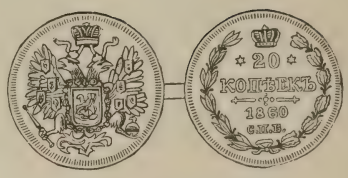


Dollar (Silver).

COINS OF RUSSIA.



Ruble, 1849 (Silver).



Twenty-Copeck Piece (Silver).

COINS OF JAPAN.



Twenty Yen (Gold).



Fifty Sen (Silver).

coins other than those enumerated in the act is prohibited. It is provided that upon the coins of the United States there shall be the following devices and legends: Upon one side an impression emblematic of liberty, with an inscription of the word "Liberty" and the year of the coinage; and upon the reverse the figure of an eagle, with the inscriptions "United States of America" and "E Pluribus Unum," and a designation of the value of the coin; but on the gold dollar and three-dollar piece, the dime, five-, three-, and one-cent piece, the figure of the eagle shall be omitted; and on the reverse of the silver trade dollar the weight and the fineness of the coin shall be inscribed; and the motto "In God we trust" may be added when practicable.—A new coinage has been struck in Germany, having the mark worth 23·8 cents as the unit, which after 1875 is to be the exclusive specie currency of the empire.—In the following table of gold and silver coins of different countries, taken from the annual report of the Hon. James Pollock, director of the United States mint, for the year ending June 30, 1872, the gold values are computed according to the value of United States coins ($18 60·4 per oz. standard); the silver values according to the mint price for that year of silver ($1 22½ per oz. standard).

GOLD.

COUNTRY AND DENOMINATION.	Weight in ounces.	Fineness, 1000ths.	Value.
AUSTRIA.			
Ducat	0·112	986	$2 28·3
Souverain	0·363	900	6 75·4
Four florins	0·104	900	1 93·5
BELGIUM.			
Twenty-five francs	0·254	899	4 72
BOLIVIA.			
Doubloon	0·867	870	15 59·3
BRAZIL.			
Twenty milreis	0·575	917·5	10 90·6
CENTRAL AMERICA.			
Two escudos	0·209	853·5	3 68·8
Four reals	0·027	875	0 48·8
CHILI.			
Old doubloon	0·867	870	15 59·3
Ten pesos	0·492	900	9 15·4

GOLD COINS—*Continued.*

COUNTRY AND DENOMINATION.	Weight in ounces.	Fineness, 1000ths.	Value.
COLOMBIA.			
Old doubloon, Bogotá	0·868	870	15 61·1
" " Popayan	0·867	858	15 37·8
Ten pesos	0·525	891·5	9 67·5
DENMARK.			
Ten thalers	0·427	895	7 90
ECUADOR.			
Four escudos	0·433	844	7 55·5
ENGLAND.			
Pound or sovereign, new	0·256·7	916·5	4 86·3
" " average	0·256·2	916	4 85·1
Guinea (1793)	0·269·6	916·6	5 12
FRANCE.			
Twenty francs, new	0·207·5	899	3 85·8
" " average	0·207	899	3 84·7
GERMANY.			
Ten thalers, Prussian	0·427	903	7 97·1
Twenty marks	0·256	900	4 76·2
GREECE.			
Twenty drachmas	0·185	900	3 44·2
INDIA (BRITISH).			
Mohur	0·374	916	7 08·2
ITALY.			
Twenty lire	0·207	898	3 84·3
JAPAN.			
Old cobang	0·362	568	4 44
" "	0·289	572	3 57·6
Twenty yens	1·072	900	19 94·4
MEXICO.			
Doubloon, average	0·867·5	866	15 53
" new	0·867·5	870·5	15 61·1
Twenty pesos (Maximilian)	1·086	875	19 64·3
" " (Republic)	1·081	873	19 51·5
NAPLES.			
Six ducats, new	0·245	996	5 04·4
NETHERLANDS.			
Ten guilders	0·215	899	3 99·7
PERU.			
Old doubloon	0·867	868	15 55·7
Twenty soles	1·055	898	19 21·3
PORTUGAL.			
Gold crown	0·308	912	5 80·7
RUSSIA.			
Five rubles	0·210	916	3 97·6
SPAIN.			
One hundred reals	0·268	896	4 96·4
Eighty reals	0·215	869·5	3 86·4
Ten escudos	0·270·8	896	5 01·5
SWEDEN.			
Ducat	0·111	875	2 23·7
Carolin, ten francs	0·104	900	1 93·5
TUNIS.			
Twenty-five piastres	0·161	900	2 99·5
TURKEY.			
One hundred piastres	0·231	915	4 36·9
TUSCANY.			
Sequin	0·112	999	2 31·3
UNITED STATES.			
Double eagle	1·075	900	20 00
Eagle (before 1834)	0·562·5	916⅔	10 65·8
" (since 1834)	0·537·5	900	10 00
Half eagle	0·268¾	900	5 00
Three dollars	0·161¼	900	3 00
Quarter eagle	0·134⅜	900	2 50
Dollar	0·053¾	900	1 00

SILVER.

COUNTRY AND DENOMINATION.	Weight in ounces.	Fineness, 1000ths.	Value.
AUSTRIA.			
Old reichsthaler	0·902	833	$1 02·3
Old scudo	0·836	902	1 02·6
Florin (before 1858)	0·451	833	51·1
New florin	0·397	900	48·6
New union reichsthaler	0·596	900	73·1
Maria Theresa reichsthaler (1780)	0·895	838	1 02·1
BELGIUM.			
Five francs	0·803	897	98
Two francs	0·320	835	36·4
BOLIVIA.			
New dollar	0·801	900	98·1
BRAZIL.			
Double milreis	0·820	918·5	1 02·5

SILVER COINS—*Continued.*

COUNTRY AND DENOMINATION.	Weight in ounces.	Fineness, 1000ths.	Value.
CANADA.			
Twenty cents	0·150	925	18·9
Twenty-five cents	0·187·5	925	23·6
Fifty cents	0·375	925	47·2
CENTRAL AMERICA.			
Dollar	0·866	850	1 00·2
CHILI.			
Old dollar	0·864	908	1 06·8
New dollar	0·801	900·5	98·2
CHINA.			
Dollar (English)	0·866	901	1 06·2
Ten cents	0·087	901	10·6
COLOMBIA.			
Dollar of 1857	0·803	896	98
DENMARK.			
Two rigsdalers	0·927	877	1 10·7
ENGLAND.			
Shilling, new	0·182·5	924·5	23
" average	0·178	925	22·4
Florin (1852)	0·363·6	925	45
Half crown (1845)	0·454·5	925	56
FRANCE.			
Five francs, average	0·800	900	98
Two "	0·320	835	36·4
Franc (1860)	0·160	900	18·2
GERMANY, NORTH.			
Thaler (before 1857)	0·712	750	72·7
New thaler	0·595	900	72·9
GERMANY, SOUTH.			
Florin (before 1857)	0·340	900	41·7
New florin	0·340	900	41·7
GREECE.			
Five drachmas	0·719	900	88·1
INDIA (BRITISH).			
Rupee	0·374	916·5	46·6
ITALY.			
Five lire	0·800	900	98
Lira	0·160	835	18·2
JAPAN.			
Itzebu	0·279	991	37·6
New itzebu	0·279	890	33·8
Yen	0·866·7	900	1 00·8
Fifty sens	0·402	800	44·6
MEXICO.			
Dollar, new	0·867·5	903	1 06·6
Dollar, average	0·866	901	1 06·2
Peso of Maximilian	0·861	902·5	1 05·5
NAPLES.			
Scudo	0·844	830	95·3
NETHERLANDS.			
Two and a half guilders	0·804	944	1 03·3
NORWAY.			
Specie daler	0·927	877	1 10·7
PERU.			
Old dollar	0·866	901	1 06·2
Dollar of 1858	0·766	909	94·8
Half dollar (1835 and 1838)	0·433	650	38·3
Sol	0·802	900	98·2
PORTUGAL.			
Five hundred reis	0·400	912	49·6
ROME.			
Scudo	0·864	900	1 05·8
RUSSIA.			
Ruble	0·667	875	79·4
SPAIN.			
Five pesetas (dollar)	0·800	900	98
Peseta (pistareen)	0·160	835	18·2
SWEDEN.			
Specie daler	1·092	750	1 11·5
SWITZERLAND.			
Two francs	0·320	835	36·4
TUNIS.			
Five piastres	0·511	898·5	62·5
TURKEY.			
Twenty piastres	0·770	830	87
UNITED STATES.			
Dollar	0·859·4	900	1 04·5*
Half dollar (since 1853)	0·400	900	50
Quarter dollar	0·200	900	25
Dime	0·080	900	10
Half dime	0·040	900	5
Three cents (Act of 1873.)	0·024	900	3
Dollar	0·875	900	
Half dollar	0·401·8	900	
Quarter dollar	0·200·9	900	
Dime	0·080·3	900	

* As compared with the half dollar.

The following table, compiled from the last report of the director of the mint, exhibits the aggregate United States coinage from the establishment of the mint in 1793 to June 30, 1873:

PERIOD.	Gold Coinage.	Silver Coinage.	Minor Coinage.	Entire Coinage.
1793 to 1817	$5,610,957 50	$8,268,295 75	$319,340 28	$14,198,593 53
1818 to 1837	17,839,382 50	40,566,897 15	476,574 30	58,682,853 95
1838 to 1847	49,554,452 50	22,331,719 00	349,676 63	72,235,848 13
1848 to 1857	408,856,176 14	35,791,307 63	517,222 34	445,164,706 11
1858 to 1867	403,717,501 97	30,956,287 51	5,752,310 00	440,426,099 48
1868	24,141,235 06	1,592,986 48	1,713,385 00	27,447,606 54
1869	32,031,126 43	1,575,619 05	1,279,055 00	34,885,801 48
1870	29,931,739 78	2,474,658 54	611,445 00	33,017,838 32
1871	34,388,137 12	5,518,501 70	283,760 00	40,190,598 82
1872	36,193,073 77	13,421,779 37	123,020 00	49,737,773 14
1873	55,744,953 61	9,967,710 00	494,050 00	66,206,713 61
Total	$1,097,683,511 22	$172,392,780 23	$11,919,838 55	$1,281,996,130 00

Of the total gold coinage, $280,805,517 85 consisted of bars; the silver bars amounted to $27,770,503 66. The number of gold coins struck was 181,673,669; silver coins, 524,624,186; minor coins, 674,597,467, of which 105,522,000 were five-cent pieces, 26,845,000 three-cent pieces, 45,601,000 two-cent pieces, 488,644,244 one-cent pieces, and 7,985,223 half-cent pieces. —For the process of coinage, see MINT; and for ancient coins, NUMISMATICS.—The subjoined tables exhibit the comparative value of the coins of different countries and ages. The tables of ancient coins are those of Dr. Arbuthnot, whose authority, however, has been called in question.

JEWISH COINS.

NAMES AND PROPORTIONS.	Value in English money.	Value in U. S. money.
	£ s. d.	$ cts.
Gerah	0 0 $1^{59}/_{160}$	0 02·766
10 Bekah	0 1 $11^{11}/_{16}$	0 27·66
20 2 Shekel	0 2 $3^{3}/_{5}$	0 55·32
1000 100 50 Maneh, Mina Hebraica	5 14 $0^{3}/_{4}$	27 66
60000 6000 3000 60 Talent	342 3 9	1,659 60·9
Solidus aureus, or sextula, worth	0 12 $0^{1}/_{2}$	2 92
Siclus aureus, worth	1 16 6	8 85

GRECIAN COINS.

NAMES AND PROPORTIONS.	Value in English money.	Value in U. S. money.
	s. d. qrs.	$ cts.
Lepton	0 0 $0^{31}/_{336}$	0 00·0466
7 Chalcus	0 0 $1^{31}/_{48}$	0 00·326
14 2 Dichalcus	0 0 $1^{7}/_{24}$	0 00·652
28 4 2 Hemiobolum	0 0 $2^{7}/_{12}$	0 01·305
56 8 4 2 Obolus	0 1 $1^{1}/_{6}$	0 02·61
112 16 8 4 2 Diobolum	0 2 $2^{1}/_{3}$	0 05·22
224 32 16 8 4 2 Tetrobolum	0 5 $0^{2}/_{3}$	0 10·44
336 48 24 12 6 3 1½ Drachma	0 7 3	0 15·66
672 96 48 24 12 6 3 2 Didrachma	1 3 2	0 31·32
1344 192 96 48 24 12 6 4 2 Tetradrachma	2 7 0	0 62·64
1680 240 120 60 30 15 7½ 5 2½ 1½ Pentadrachma	3 2 3	0 78·31

Of these, the drachma, didrachma, &c., were of silver, the rest for the most part of brass. The drachma is here, with most authors, supposed equal to the denarius; though there is reason to believe that the drachma was somewhat heavier.

	£ s. d.	$ cts.
The Grecian gold coin was the stater aureus, weighing 2 Attic drachmas, or half of the stater argenteus, and exchanging usually for 25 Attic drachmas of silver	0 16 1½	3 91·5
But according to our proportion of gold to silver, it was worth	1 0 9	5 03
There were likewise the stater Cyzicenus, exchanging for 28 Attic drachmas, or	0 18 1	4 38·5
The stater Philippicus and stater Alexandrinus were of the same value.		
The stater Daricus, according to Josephus, was worth 50 Attic drachmas	1 12 3½	7 83
The stater Crœsius was of the same value.		

ROMAN COINS.

NAMES AND PROPORTIONS.	Value in English money.	Value in U. S. money.
	s. d. qrs.	$ cts.
Teruncius	0 0 $0^{775}/_{1000}$	0 00·3915
2 Sembella	0 0 $1^{55}/_{100}$	0 00·783
4 2 Libella As	0 0 $3^{1}/_{10}$	0 01·566
10 5 2½ Sestertius	0 1 $3^{3}/_{4}$	0 03·91
20 10 5 2 Quinarius, or Victoriatus	0 3 $3^{1}/_{2}$	0 07·83
40 20 10 4 2 Denarius	0 7 3	0 15·66

The denarius and quinarius were of silver; the other coins were also of brass or copper, the three smaller being generally of the base metals.

	£	s.	d.	$ cts.
The Roman gold coin, or aureus, weighed generally double the denarius; its value, according to the proportion of gold to silver mentioned by Pliny, was	1	4	3¼	5 89·6
According to the proportion that now obtains among us	1	0	9	5 03
According to the decuple proportion mentioned by Livy and Julius Pollux	0	12	11	3 13·2
According to the proportion mentioned by Tacitus, by which the aureus exchanged for 25 denarii, its value was	0	16	1¼	3 91·5

An English writer says of these tables of ancient coins that they "are constructed on the hypothesis that the consular denarii weighed by Greaves were of the same purity as English standard silver, and that no subsequent diminution was made either in their weight or fineness. The conclusion derived from such data, though differing in degree, are of the same character as those which we should arrive at if, in estimating the value of the pound sterling during the last 100 years, we took for granted that it contained a pound weight of standard silver, as in the period from the conquest to the reign of Edward I."

COIRE, or **Chur** (Romansch, *Cuera ;* anc. *Curia Rhætorum*), a town of Switzerland, capital of the canton of Grisons, 59 m. S. E. of Zürich; pop. in 1870, 7,552. It occupies a picturesque site at the mouth of the defile of the Plessur, about a mile from the Rhine, and is the principal depot on the route from Italy into Switzerland and western Germany by the Splügen and Bernardino passes. The church of St. Lucius and the bishop's palace are curious old buildings, portions of which date back to the 8th century or earlier. There are also a town hall, public library, Catholic seminary, and cantonal schools. It is the seat of probably the oldest bishopric in Switzerland, dating from the 5th century. The Romansh, a corruption of Latin, is spoken here, and a newspaper is published in that tongue. It is the birthplace of the painter Angelica Kauffman.

COIT, Thomas Winthrop, an American clergyman, born in New London, Conn., June 28, 1803. He graduated at Yale college in 1821, entered the ministry of the Episcopal church, and became rector of St. Peter's church, Salem, Mass., in 1827, and two years later rector of Christ's church, Cambridge. In 1834 he was elected president of Transylvania university, Lexington, Ky. This office he resigned in 1839, and became rector of Trinity church, New Rochelle, N. Y., which position he held for about ten years. In 1854 he was elected professor of ecclesiastical history in Berkeley divinity school, Middletown, Conn., the duties of which post he discharged in connection with the rectorship of St. Paul's church, Troy, N. Y. He resigned the rectorship in 1872, and has been since chiefly occupied in the duties of his professorship. Dr. Coit ranks among the foremost of living scholars in the Episcopal church, and is the author of several able works in defence of its doctrines and position. Besides a large number of occasional addresses and sermons, and contributions to the "Church Review," he has published "A Theological Commonplace Book;" "The Bible and Apocrypha in Paragraphs and Parallelisms" (2 vols., 1834); "Remarks on Mr. Norton's Statement of Reasons" (1834); "Townsend's Chronological Bible" (2 vols., 1837); "Puritanism, a Churchman's Defence against its Aspersions" (1844); "Lectures on the Early History of Christianity in England" (1859); and a report on the "Standard Prayer Book" (1868).

COJUTEPEC, or **Cojutepeque,** a town of San Salvador, Central America, in the department of Cuscatlan, a few miles N. of a lake of the same name, and about 15 m. E. of San Salvador; pop. 15,000. It was the seat of government from 1854 to 1858, San Salvador, the capital, having been destroyed by an earthquake in the former year. The country around it is volcanic. Lake Cojutepec, sometimes called Ilopango, is 12 m. long and 5 m. broad. It is surrounded by high abrupt hills, and is probably the crater of an ancient volcano. It receives no tributary streams, but has a small outlet flowing through a deep ravine into the Rio Jiboa, near the base of the volcano of San Vicente. After a gale its waters assume a dark greenish hue and exhale a disagreeable sulphurous odor, and dead fish are cast ashore in large numbers.

COKE, the solid product left behind when the volatile matters are expelled by distillation from bituminous coal. There are two kinds: gas coke, obtained from the retorts of gas works after the gases have been separated; and oven coke, which is made in ovens or pits, and which is considered by manufacturers as the only true coke, gas coke being merely cinder. Oven or pit coke is made upon a large scale at mines of bituminous coal, for the purpose in part of saving the fine refuse coal by converting it into a valuable fuel, and in part of converting the lump coal into a form better adapted for metallurgic operations, and for the use of locomotives when the flame and smoke of bituminous coal would be objectionable, as upon underground railways and in populous streets. It was formerly the opinion of some engineers that the calorific qualities of bituminous coal exist undiminished in the coke, notwithstanding that the gases expelled in the process of making the coke possess also a considerable heating power. Mr. Josiah Parker states, in vol. ii. of the "Transactions of the Institution of Civil Engineers," that he has "found that 75 lbs. of coke, produced from 100 lbs. of coal, evaporated as much water as 100 lbs. of the self-same coal." He also cites the experience of Mr. Apsley Pellatt in his glass furnaces, which were especially well adapted for showing the relative calorific value of coke and coal, provision being made in them for the full combustion of the volatile products of the coal. Of late years, however, after much discussion upon the subject, bituminous coal has come into use in place of coke upon the prin-

cipal railway lines in England, the use of the latter being retained only when flame and smoke require to be avoided. Coke has never been used on American railroads, and now that locomotives are so constructed that crude coal can be burned with facility and economy, the occasion will probably never arise. In consequence of its freedom from sulphur, coke is much better adapted to metallurgic processes, and therefore special attention has been directed in Europe, not only to the best methods of preparing it, but to the selection of that kind of coal which is best adapted to the purpose; and it has been found in practice preferable to incur considerable expense to procure it of the best quality, some companies even preferring to obtain it from England rather than use the cheaper but inferior qualities made from the coals of France and Belgium. The cause of the superiority of the English coke is attributed to the coal beds of England containing but few seams of slate interstratified with the coal; so that this is obtained clear of the impurities which in the French and Belgian coals add largely to the proportion of ash, and render it necessary to subject the coal to processes of washing and sorting before coking. Iron pyrites is the principal objectionable material in coal for melting metals, and to get rid of it is the chief problem of the coke maker. A protracted application of heat expels a great part of the sulphur, with the formation of bisulphide of carbon and carburet of iron. The bisulphide of carbon, being volatile, passes off, and the carburet of iron which remains does no injury unless there is silica present, which is not the case in good coking coal. In the north of England it has been found that when the coal contains much pyrites, if it is first treated with a very strong brine the elimination of the sulphur is very greatly facilitated. The tendency to vitrifaction possessed by clays and lime salts renders these substances objectionable in coke, and therefore good coking coal is only found in certain districts. (See Coal.)—Two methods of coking are in use: one in ovens constructed for the purpose, and the other in large open heaps, upon the ground. The ovens are built of fire brick or stone of various sizes, and frequently arranged several together in one stack, in which case dimensions of 12 ft. square and 10 ft. high are found most convenient. They are arched over at the top, a hole being left for the exit of the gases, and another for the introduction of the coal, closed by an iron door in front. About two tons of coal are introduced through the latter, filling the oven to the springing of the arch, and leaving room above for the coal to swell. The charge is ignited by the heat left in the walls by the process just previously completed. Air is allowed to enter in proper quantity at the lower door, and the gases escape at the top. In 24 hours the air holes below are closed, and for 12 hours more the gases pass out at the top. The upper hole is then closed with a slab of stone or iron and covered with sand, and left for 12 hours more to partially cool down the charge. After this the door below is opened, the coke taken out quickly, quenched with water, and carried off in iron wheelbarrows. Where it is an object to save the coal tar, the ovens are provided with a flue at the top, through which the volatile products are conducted into a receptacle in which the liquid matters are condensed. The product of bituminous coal in coke, gas, and tar varies with its quality. As it approaches anthracite in quality, the yield of coke is large and of gas small, while the reverse is the case with the fat or highly bituminous coals. From 50 to 75 per cent. is the general range of the yield of coke. Upon some of the railroads in England the size of the ovens is stated to be 30 ft. square, and the charges about 8 tons each, spread in a thickness of about 4 ft. The duration of the process is 96 hours. With the same coals and ovens, by making the charges lighter and increasing the quantity of air admitted, and thus raising the temperature, so as to complete the process in 48, 24, or even 12 hours, the coke will be obtained lighter and more friable according as it may be desired. It has been found that the higher the heat of the oven the larger the yield of coke. This fact seemed for a long time anomalous, but is explained by well known chemical laws. When coal is melted, its hydrogen and carbon combine in the form of bicarburetted hydrogen, which in passing up through the red-hot coal above is decomposed into solid carbon and light carburetted hydrogen. Thus one half of the carbon of the gas is saved. The principle is illustrated by passing bicarburetted hydrogen through a red-hot tube, which after a while will become filled with a solid carbonaceous deposit.—Coking in the open heap is the most common practice at the mines of bituminous coal of the United States, and this is the oldest method. The coal is piled up in long ranges, extending sometimes 200 ft. in length, with a width of 12 ft. at the base, and a height of 6 ft. The piles are made so that along the whole length an air passage extends through the centre on the ground. The largest lumps are placed in the middle portion, and smaller and smaller pieces toward the outside. Stakes are set up at intervals along the central line of the heap, which reach down to the base; when the pile is completed, these are taken out, and the passages they leave serve for the introduction of burning coals to fire the heap along its whole length. Whenever the thick black smoke and flame cease in any portion, and this begins to show appearance of ashes, the fire is kept down by the application of coke dust or ashes; and this goes on until the whole heap is thus covered. It is then left for a few days to cool. Portions exposed to the full action of the wind require, as in the process of making charcoal, a thicker cover of dust or ashes to check the consumption of the product. When sufficiently cool, the coke

is drawn out. The process is not an economical one, much of the inside coal being always consumed to waste before the inner portions have been coked. A method has been adopted at the Clyde iron works in Scotland, by which a part of this waste is obviated. A mound is built up of a circular form around a central chimney of brick, which may be 3 ft. square at the base and rise 3 or 4 ft. from the ground. Openings of the size of a brick are left at intervals in its sides, for the passage of the gases, and from the lowest of these the coal around is so piled that flues extend through it to the circumference of the heap. The diameter of the mound may be 20 ft., and its ashes 4½ ft., sufficient with the cover of ashes and cinders to reach above the top of the chimney. The heap is lighted by burning coals thrown into the chimney, from which the flames reach through the aperture. In four or five days, when the mound has become thoroughly on fire, the apertures on the outside and the top of the chimney are closed with plates and ashes, and the heap is left to cool for three days, after which the coke is drawn out. It is the practice now in Europe to utilize the heat produced in making coke. At some chemical works salt is made by using the waste heat; in blast furnaces the air has been heated from the same source, and in many others the heat from the burning of the escaping gases is used to increase the heat of the coking oven itself. Many of these are in use on the continent of Europe.—A species of coke called "charred coal" is now used in place of charcoal in the manufacture of tin plates. It is made by spreading fine coal on the red-hot floor of a reverberatory furnace to the depth of four or five inches. Much gas is given off and ebullition takes place, producing a spongy mass which is removed after an hour.

COKE, Natural. At the coal mines of the lias formation, on both sides of the James river, and near Richmond, Va., beds of natural coke of good workable quality are met with, interstratified with the slates, sandstones, fire clay, and coal. On the N. side of the river is a bed 5 ft. thick, which lies slightly inclined toward the west. Several vertical shafts cut it, the deepest about 207 ft. below the surface. The coke is of a nearly uniform character, and is heavier than common coke, vesicular in texture, and of a dull black color. The volatile ingredients of the coal are almost wholly wanting, and the coke does not differ in its properties and appearance from much of the more compact artificial varieties. Twenty feet above the coke, the agent which effected this change, and also altered the beds of fire clay and slate, is seen in an intercalated layer of trap rock of 15 to 30 ft. in thickness. Immediately beneath the trap is a bed of carbonaceous fire clay and cinder 5 ft. thick, baked and hardened by the action of the trap. Under the coke bed is another stratum of indurated fire clay, and beneath this one of coal slates 20 ft. thick. Another carbonaceous bed is then cut by the shaft; this is a thin layer of half-coked coal. Twenty feet below this is another coal bed of the usual bituminous composition, its structure unaltered.

COKE, Sir **Edward,** an English jurist, born at Mileham, Norfolk, Feb. 1, 1552, died at Stoke Pogis, Buckinghamshire, Sept. 3, 1633. Nothing of particular interest is related of his school days at the grammar school in Norwich, or in the university of Cambridge. He left Cambridge without taking a degree, and at the age of 20 commenced the study of law at an inn of chancery, where he spent a year in acquiring a knowledge of the forms of writs and proceedings in courts, and then entered upon the study of general jurisprudence in the Inner Temple. He was called to the bar a year before the expiration of the time prescribed for legal studies (at that time seven years), in 1578, and was soon after appointed reader (lecturer) of Lyon's Inn (an inn of chancery), which office he held three years, and so distinguished himself by his lectures that he gained much repute for legal learning. Within that time he rose to the highest rank in the profession by his argument in Shelley's case, the most celebrated case relating to real estate which is to be found in the English reports. He was thenceforth employed in most of the important cases in Westminster, was successively elected recorder of Coventry, then of Norwich, and lastly of London, and was appointed reader (law professor) of the Inner Temple. In 1592 he was, at the instance of Lord Burleigh, appointed solicitor general, and the following year he was returned to parliament as the representative of Norfolk, and was chosen speaker of the house. In 1594, the office of attorney general becoming vacant, Coke expected to succeed to it in regular course, but was unexpectedly met by a formidable claimant, Francis Bacon, backed by the influence of the earl of Essex. Queen Elizabeth resisted the solicitation of her favorite, and appointed Coke; but it was the commencement of bitter hostility between the rivals, which, with alternating success, was ultimately disastrous to both. In 1598 Coke lost his first wife, to whom he had been married 16 years, and within four months married Lady Hatton, a wealthy young widow, who within a year bore to him a daughter, but refused to take his name, being always known as Lady Hatton. In 1600 he published the first of the 11 parts of his reports. The other parts were published in the following reign. The preface is characteristic of the author. He proposes no diminution of the student's labor by any facility which his reports are to furnish. "My advice to the reader," he says, "is that in reading of these or any new reports, he neglect not in any case the reading of the old books of years reported in former ages, for assuredly out of the old fields must spring and grow the new corn." In his subsequent works he often reiterates the same advice. He did not encourage the use of abridgments, except

for reference to the original cases, but insists upon the study of the cases themselves. The trial of the earls of Essex and Southampton for high treason, which occurred early in 1601, brought out harsh traits in the character of Coke. His statement of facts in opening the case was exaggerated, and his manner abusive, and this was continued throughout the trial. In the first year of King James, the trial of Sir Walter Raleigh upon a charge of high treason for a conspiracy to place the lady Arabella Stuart on the throne again exhibited Coke (who still remained attorney general) as a public prosecutor, and on this occasion to arrogance and vituperation he added an unfair attempt to convict the prisoner upon evidence which he knew to be insufficient, and in fact inadmissible. The advancing favor of Bacon with King James now exasperated the former enmity of Coke against him. The literary renown of Bacon, and the personal regard shown for him by Elizabeth, although it had not procured him official station other than the honorary one of queen's counsel, had excited the jealousy of Coke, and sharp encounters had taken place between him and Bacon. As attorney general Coke rendered efficient service in the unravelling of the gunpowder plot and the prosecution of the parties concerned. On the trial Coke opened the case to the jury at enormous length, interlarding his diatribe against the prisoners with quaint conceits. To Sir Everard Digby, one of the prisoners, who confessed the charge, but prayed the mercy of the king as to the mode of death, and also in behalf of his family, Coke answered that he must not look to the king to be honored in the manner of his death, but was rather to admire the moderation of the king in that for so important a crime no new torture answerable thereto had been devised to be inflicted on him. The trial of Garnett, the superior of the Jesuits, who was implicated in the same plot, called forth still greater effort on the part of Coke to show his zeal for the king and severity to the prisoner. — In 1606 Coke was appointed chief justice of the common pleas, and Bacon in 1607 solicitor general. From the time he entered upon his office he exhibited an integrity and independence in striking contrast with his former violation of private rights in his zeal to serve the crown. Indeed, the difference is so great that we hardly recognize Coke the chief justice as the same person with Coke the attorney general. Thus he granted writs of prohibition to restrain the court of high commission from issuing process for the arrest of parties complained against, which practice, recently introduced in place of citation, Coke maintained to be contrary to Magna Charta. He resisted the pretension of King James to the right of sitting in person to hear causes, which was a device suggested for the purpose of getting rid of prohibition and appeal. Prohibitions were also issued from the common pleas to check the arbitrary proceedings of the lord president of Wales, and of the lord president of the North. Complaint having been made to the king of these prohibitions, and the judges having been summoned before the council, Coke justified the judges; and in like manner, when the question came up as to the king's prerogative to impose penalties and otherwise alter laws by proclamation, and the opinions of the judges were demanded by the king for the purpose of enforcing the power claimed, Coke resisted, and finally got the rest of the judges to concur in an answer that a proclamation was no law. The effect of this bold opposition to arbitrary power can hardly be overestimated. It at least checked abuses, and it led to investigation as to the limit imposed by law. Although Coke had but little turn for abstract reasoning about natural rights, he was inflexible in maintaining such rights as had been recognized by law. In 1613 Coke was removed from the office of chief justice of the common pleas to the chief justiceship of the king's bench. The change was intended partly as a penalty for his conduct in the matters before referred to, but chiefly to favor the advancement of Bacon, who wished the place of attorney general, and Hobart, who then held the office, was willing to exchange for the chief justiceship of the common pleas, but not of the king's bench. The reluctance of Coke to leave the common pleas may be explained by the fact that far the larger part of the civil business of the kingdom was transacted in that court, it having exclusive jurisdiction of all cases relating to real property. It appears from a letter of Bacon to the king that it was designed to put Coke upon his good behavior, and to prepare the way for his final dismissal from office if he should fail to become conformable to the views of the court. He was in fact dismissed three years afterward, but in the mean time, with the certainty of losing his place by persistence in the course of judicial independence which he had heretofore pursued, he fearlessly resisted the encroachment of royal prerogative, and the corrupt attempts of court minions to pervert his administration of the law to improper purposes. Two memorable instances occurred of Coke's inflexibility in maintaining what he believed to be right, although exceedingly obnoxious to the king: his contest with the court of chancery, and his resistance of the interference of the king in the matter of the commendams. The court of chancery had exercised the power of correcting judgments of other courts. The limit of this power had not been well defined. There were many cases where, by the rigid practice at common law, great injustice was done, and relief could be had only by the equitable administration of chancery; but some of the chancellors had proceeded as if they had a general right to review the judgments of all other courts. Coke wholly denied the authority of the court as thus claimed. He and his

associate judges declared it to be an indictable offence to question a judgment of the king's bench or common pleas; and an effort was made to get an indictment against the parties, solicitors, and officers of the court of chancery, in two cases in which injunctions had been granted by the chancellor against judgments at law. But as it appeared that gross fraud had been committed in the obtaining of these judgments, the grand jury could not be persuaded to bring in a bill. The proceeding having attracted public attention, the king appointed commissioners to inquire into the subject of dispute. The report of the commissioners sustained the proceeding of the chancellor. Proceedings were thereupon instituted in the star chamber against the private parties concerned in resisting the authority of the chancellor. The conduct of Coke on this occasion has been generally censured; but there can be no doubt that it had the effect of establishing with more precision the rule by which the interposition of the court of chancery should be regulated. The case as to the commendams was this: In a suit against the bishop of Lichfield and Coventry respecting a benefice, the defendant pleaded that he held it *in commendam*, which was an appointment by the king in certain cases until a new incumbent could be regularly appointed. The question was involved as to the right of the king to make such grants. Upon being advised of the discussion, the king sent a message to Coke signifying his pleasure that all proceedings should be stayed till the judges should have a conference with his majesty on the subject. A meeting of all the judges having been held for consultation, it was resolved by them that the court ought to proceed as though they had received no notice, which was accordingly done, and a memorial signed by the 12 judges was sent to the king, in which they say: "We hold it our duty to inform your majesty that our oath is in these express words, 'that in case any letter come to us contrary to law, we do nothing therefore but certify your majesty thereof, and go forth to do the law notwithstanding the same.' We have advisedly considered the said letter of Mr. Attorney, and with one consent do hold the same to be contrary to law, and such as we could not yield to the same by oath." A sharp response followed from the king, ordering the judges to proceed no further till his coming in town. He then called them before him, and commented severely upon their course of proceeding and the form of their letter; upon which the judges kneeled and craved pardon. But Coke, though he expressed sorrow for any error of form, still persisted in defending the substantial right of what he had done. The king himself seems to have been impressed by the noble bearing of the chief justice, for the court was permitted to proceed in the cause of the bishop, which was finally decided against him.—The active measures taken by Coke for the conviction of the murderers of Sir Thomas Overbury gave further offence to James, and he probably intended the removal of Coke upon the first favorable opportunity. This intention was no doubt precipitated by the enmity of the new favorite Villiers, who had been thwarted by the chief justice in a corrupt attempt at the disposition of a lucrative clerkship in the king's bench. The removal was, however, put upon very different grounds. Among the charges which he was required to answer before the council were: 1, the alleged concealment of a bond belonging to the crown; 2, his misconduct in the dispute with the chancellor respecting injunctions; 3, his disrespectful conduct to the king in the matter of the commendams. A few days afterward he was again called before the council, when sentence was pronounced that he be suspended from the council and from his judicial functions till the king's pleasure should be further known, and in the mean time that he should revise his books of reports, wherein it was alleged that "many extravagant and exorbitant opinions were set down for good law." After the summer vacation he was again cited before the privy council to answer as to revision of errors in his reports, when he made a specification, showing that there were not more errors in his 11 books of reports, containing 500 cases, than could be found in a few cases in Plowden. The whole charge was indeed frivolous; but a *supersedeas* nevertheless issued, removing him from his office (1616), and Montague was appointed in his place. Not long after his disgrace Coke offered his daughter in marriage to Sir John Villiers, brother of the duke of Buckingham, the royal favorite. She was only 14 years of age, but was a rich heiress, as the estate of her mother, Lady Hatton, was entailed upon her, and she also had an expectancy from her father's immense wealth. The match had been sought by Villiers, who was poor, and had been rejected by Coke while chief justice. He determined on availing himself of it now for the purpose of recovering from his disgrace and humbling Bacon, who was now his open enemy. Lady Hatton, who was not on good terms with her husband, and had not been consulted, refused consent, and carried off her daughter to a place of concealment. Coke, having ascertained where they had fled, pursued, broke open the house, and took his daughter away. The mother appealed to the privy council. Bacon, who had been appointed lord keeper, warmly supported her, and proceedings were instituted in the star chamber against Coke. The king, however, who was then in Scotland, sharply reproved the lord keeper, and on his return the parties were so far reconciled that the marriage took place. Coke was restored to his place in the privy council (1617), but received no other appointment, except temporarily as one of the commissioners of the treasury while the office of lord treasurer was vacant. Bacon, on the other hand, entirely recovered a good understanding with the king,

and was shortly after made lord chancellor. The lord treasurer's office, which Coke expected to have had, was finally given to Montague, who had succeeded him as chief justice; and instead of his being restored to the chief justiceship, that place was filled by an obscure lawyer.—After his removal from office Coke did not intermit his legal pursuits. The 12th and 13th parts of his reports were prepared, though not published, as they contained the obnoxious opinions he had expressed upon proclamations, the court of high commission, and some other matters. He had also commenced his great work, the "Commentary on Littleton." Utterly destitute of orderly arrangement, this work is exuberant in legal learning and curious illustrations of English customs; vigorous in style, and interesting even to non-professional readers by the quaint and amusing analogies with which the gravest discussions are interspersed. The commentary is written in English, for which he deemed it necessary to make an apology in the preface. The reports, that is, the 11 parts which had then appeared, were printed in Norman French; the 12th and 13th parts were not published till 1654, having been translated into English, as were subsequently the other parts. The reports had one peculiarity which has never been adventured upon by any other author, viz.: that they represent many questions to have been resolved which in fact did not arise in the cause, or which were not at all events decided; and these he disposes of according to his own judgment, with abundant citations of authorities. Yet such was the respect entertained for his opinion, that these resolutions were always regarded as of equal weight with the opinions of the judges actually expressed.—The closing period of the life of Coke was brilliant and eventful. He was a member of parliament in 1621, and when the motion for a supply was made, secured a reference of the subjects of supply and grievances to a committee of the whole house. His first measure was a report upon the illegal grants of monopolies to Sir Giles Mompesson and Sir Edward Villiers, which report was agreed to, and sent to the upper house for concurrence. Consentaneously with this, an investigation of judicial abuses was instituted, which was aimed at Bacon; and although Coke declined acting as chairman of the committee, yet he directed all the proceedings, prepared the charges, and prescribed the mode of prosecution. Coke was to have been the manager of the prosecution before the house of lords; but Bacon shrank from the contest, and by a plea of guilty sought to shelter himself from his revengeful adversary under the sympathy of the lords and the dispensing power of the crown. Coke followed up his success by carrying through the house an address against the proposed match of Prince Charles with the infanta of Spain. This called forth a threatening response from the king, in which he mentioned Sir Edward Coke by name as particularly obnoxious to censure. Finally, in a letter to the speaker, the king intimated his intention "to punish any man's misdemeanor in parliament, as well during the sitting as after." Coke immediately moved a protestation for the privileges of the house, which having been reported by a committee, setting forth the right of every member of the house to freedom of speech, and the "like freedom from all impeachment, imprisonment, and molestation," on account of anything said or done in parliament, it was carried and entered on the journals of the house. The king immediately prorogued parliament, sent for the journals, and with his own hand tore out the offensive protestation. This was followed by a dissolution, and the arrest of Coke, Philips, Pym, and other leaders of the commons. The ex-chief justice was confined in the tower, but after some months' imprisonment was set at liberty, upon the intercession of Prince Charles; his name was however stricken out of the list of privy councillors. He was returned again as member of parliament on the accession of Charles I. (1625), and obtained the appointment of a committee on expenditures, which was proceeding so vigorously that the king suddenly dissolved parliament. An attempt was made to keep him out of the next parliament by appointing him sheriff of the county of Norfolk; nevertheless, he was returned as a member, but the parliament was dissolved before his right to a seat was settled. In 1628 he was again elected, and he proceeded at once to attack the recent illegal measures of the king. The first was commitments by order of the privy council, without specifying the cause in the warrant; and he carried through two resolutions, which constituted the basis of the famous habeas corpus act, passed many years after, in the 31st of Charles II. (1679). He then framed the famous petition of right, which enumerated the prominent grievances of the nation from the abuse of prerogative, and declared them all to be contrary to the laws and customs of the realm. This was carried through the house in spite of all the subterfuges of the king, and finally passed by the lords after a fruitless attempt to nullify the bill by a clause which was rejected by the commons; and after a treacherous attempt by the king to cheat the house by an evasive form of assent, he was finally compelled to approve the bill and it became a law. In every step of this arduous contest, Coke, now in his 76th year, rendered important service by his sagacity and firmness. It was his last appearance in public; though he survived six years, he lived in retirement. During this time he prepared a new edition of the commentary on Littleton, and wrote the second, third, and fourth Institutes. In 1633, when he was on his deathbed, his house was searched by order of the king for seditious papers, and all his manuscripts were carried off. He died two days afterward, in his 82d year. It is said that, except a slight attack of the gout, he was never sick until his 80th year.

COKE, Thomas, the first bishop of the Methodist Episcopal church, born at Brecon, South Wales, Sept. 9, 1747, died at sea, May 2, 1814. At the age of 16 he was sent to Oxford, and the succeeding year entered as gentleman commoner at Jesus college in that university. After graduating he returned to Brecon, of which place he was elected mayor at the age of 25. Meanwhile he pursued his studies, and in 1775 received the degree of D. C. L. Soon afterward he entered the ministry of the established church, and obtained a curacy at South Petherton. His preaching was thought too evangelical, and he was finally excluded from the pulpit. Sympathizing strongly with the Methodists, he sought an interview with Wesley, which resulted in his joining the Wesleyan society, and being appointed to London, where his zeal and talents soon brought him into notice. He rendered valuable assistance to Wesley in procuring what was called the deed of declaration, which provided for the settlement of the Methodist chapels in the connection, and restricted the conference to 100 of the preachers, and their successors. So fully had he gained the confidence of Wesley, that he was appointed president of the Irish conference in 1782. The American revolution having resulted in dissolving not only the political but the ecclesiastical relation between England and the former colonies, Wesley in 1784 ordained Coke as bishop of the Methodist church in America. In the same year he reached New York, and sought an interview with Francis Asbury, to whom he communicated the object of his mission. The authority of Coke was fully recognized, and he ordained Asbury as bishop, and both were duly accredited as the joint superintendents of the church in America. In company with Asbury he travelled through the different conferences until June, 1785, when he returned to England, and visited Wales, Scotland, and Ireland. Subsequently he went again to America, and attended the conferences throughout the entire connection. Thenceforth he devoted himself to missionary work. The first mission which he established was among the blacks in the West Indies, in 1786, whence, after visiting the several islands, he went to South Carolina, travelled through the states, and embarked for England in 1787. Soon after the session of the English conference, he went with Wesley to the Channel isles, and having spent some time there returned to England. The conference having appointed three missionaries for the West Indies, Coke accompanied them in 1788; and having passed through the islands he sailed for the continent, and arrived at Charleston in 1789. After visiting all the conferences, and with Asbury making provision for the wants of the churches under their care, he returned to England. Again in 1790 we find him among the West India islands, whence he proceeded to the continent and made the round of the conferences. While in Virginia he heard of the death of Wesley, and resolved on returning immediately to England, where he was chosen secretary of the conference. The revolution in France opening a field for Protestant missionaries, he set out for that country; but as he could not obtain a congregation in Paris, he returned to England, and devoted his time to soliciting aid for missions, and to preparing with Mr. Moore, who, with himself and Dr. Whitehead, had been designated by Wesley as his biographers, a life of that distinguished man. The conference this year engaged him to make a commentary on the Scriptures, and he made preparation for entering upon that work, which he prosecuted at intervals during another visit to the West Indies and the United States, ending in 1793. With a view of settling some difficulties which had arisen in the West Indies, he visited Holland; and on his return in 1794, he devoted himself to his commentary and to soliciting subscriptions for his missions. In 1795 he projected a mission among the Foolahs in Africa, and sent out a company of mechanics, but it proved a failure. In 1796 he again embarked for America, where he continued fulfilling his duties as bishop till 1797, when he went to Scotland and thence to Ireland. After the session of the English conference he again turned his course to America, where he arrived plundered of everything but his books, the vessel having been taken by a privateer. Again in England in 1798, he devised a plan of domestic missions for Ireland, and also established a mission in Wales. Before leaving once more for America, he published parts of his commentary, comprising the Old Testament; the remainder was not completed till 1807. The years 1802–'3 were mostly occupied in this work, so that he did not make his ninth and last visit to America till 1803. When his labors here were finished, he returned, and established a mission in Gibraltar. From this time till 1808 he was engaged in travelling in aid of the missionary cause. Meanwhile he had finished his commentary, made preparations for a history of the West Indies and a history of the Bible, and had compiled a system of philosophy. Through his influence a mission was established in 1811 at Sierra Leone, and several missionaries were sent out. In 1813 he opened a correspondence with the Rev. Claudius Buchanan in regard to India, which resulted in a determination on his part to establish a mission on the island of Ceylon. At the conference this year five preachers volunteered to go with him; and such was his zeal that when the conference hesitated on account of the expense that would be incurred, he furnished £6,000 from his own private fortune. The missionaries embarked Dec. 30, and after having been out four months, Coke was found dead in his cabin, and was buried at sea. He was a voluminous writer. Besides numerous addresses and letters to the church, he published "Life of John Wesley," written in conjunction with Henry Moore

(1792); "A Commentary on the Holy Scriptures" (6 vols. 4to, 1807); "History of the West Indies" (3 vols., 1808–'11); "History of the Bible," and "Defence of the Doctrine of Justification by Faith and the Witness of the Holy Spirit."

COKE, Thomas William, earl of Leicester of Holkham, an English agriculturist, born May 4, 1752, died June 30, 1842. He was regarded, after the death of the duke of Bedford, as the first agriculturist in the kingdom. His estate of Holkham, in Norfolk, the rental of which he raised in the period of some 60 years that it was in his possession from £2,000 to above £20,000, was the pride of the county. His annual sheep shearing, at which he entertained hundreds of guests for several days, was reckoned the greatest agricultural festival in the world. His methods of cultivation were based upon scientific principles. He introduced choice breeds of cattle and the rotation of crops, and recommended the extensive planting of turnips. He represented the county of Norfolk in parliament, with a brief interval, from 1776 to 1832. An intense hatred of toryism constituted almost the whole of his political system, but he spoke little except when agricultural measures were before the house. In 1837 he was created earl of Leicester of Holkham. Sixty years before he had been twice offered a peerage; but he refused to accept anything but the earldom of Leicester, which had been held by his maternal great-uncle, whose estates he inherited, but not his title, which had meantime been given to another person. As this earldom was still held by Marquis Townshend, the title was varied for Mr. Coke by the addition of the name of his own estate.

COLAPOOR, or **Kolapoor. I.** A rajahship of Bombay presidency, British India, bounded N. and N. E. by Sattara, E. and S. by Belgaum, and W. by the Ghauts; area, 3,445 sq. m.; pop., including dependencies, about 500,000, mostly Mahrattas and Ramooses. The latter are a predatory, warlike tribe, resembling the Bheels, to whom, however, they are superior in intelligence. The people of certain maritime towns formerly subject to the rajah were much addicted to piracy, and in 1765 the Bombay government undertook to check them by sending an expedition against Colapoor. The fort of Malwan was captured, but the evil was not entirely suppressed till 1812. The country was afterward repeatedly occupied by British troops. In 1842 the government was confided to an agent of the British, against whom a general rebellion was aroused in 1844. The rising was put down, and the control of the state was thenceforth exercised directly by the British in the name of the rajah. **II.** The capital of the rajahship, situated in a secluded valley, little visited by Europeans, 185 m. S. S. E. of Bombay, and 130 m. S. of Poonah. It is fortified, though with little strength. The first decided outbreak in the Bombay presidency, during the rebellion of 1857, occurred here.

COLBERG, or **Kolberg,** a town of Pomerania, Prussia, in the circle and 24 m. W. of the city of Köslin, on the Persante, near its mouth in the Baltic; pop. in 1872, 13,130, exclusive of a garrison of about 1,600 men. It possesses a harbor called Münde, and contains a cathedral, an ancient ducal castle, now used for a charitable institution, several churches, hospitals, factories, salt works, distilleries, extensive salmon and lamprey fisheries, and considerable export trade. The town house and aqueduct are worthy of note. Colberg has a gymnasium and a house of correction, and is noted for its sea bathing. It is memorable for the sieges it stood in 1760 and again in 1761 against the Russians, to whom it capitulated in the latter year, and in 1806–'7 against the French, when it was successfully defended by Gneisenau. In February, 1873, the government proposed to dismantle the fortress.

COLBERT, a N. W. county of Alabama, recently formed from a portion of Franklin county, bounded N. by the Tennessee river, and W. by Mississippi; pop. in 1870, 12,537, of whom 4,639 were colored. It is intersected by Big Bear creek and other affluents of the Tennessee. The Memphis and Charleston railroad passes through it. The chief productions in 1870 were 12,682 bushels of wheat, 291,402 of Indian corn, 14,347 of oats, and 3,986 bales of cotton. There were 1,190 horses, 799 mules and asses, 1,623 milch cows, 2,699 other cattle, 2,735 sheep, and 8,267 swine. Capital, Tuscumbia.

COLBERT. I. Jean Baptiste, marquis de Seignelay, a French statesman, born at Rheims, Aug. 29, 1619, died in Paris, Sept. 6, 1683. The son of a merchant, he obtained employment as a clerk in an Italian banking house at Paris, at the recommendation of Mazarin, who soon after intrusted him with the management of his private affairs. On his deathbed the cardinal said to Louis XIV.: "Sire, I am indebted to you for all that I possess; but I think I am requiting all your majesty's favors by giving you Colbert." At once admitted to the king's confidence, he began by exposing the maladministration of Fouquet, whom he succeeded in 1661 as comptroller general. Colbert's administration became a blessing to France. Order was restored in the finances, the revenue was increased, and the treasury was enabled to furnish the means for foreign wars as well as for internal improvements. The public debt was greatly reduced, and the manufacturing interest was revived. Several large manufactories were established at the expense of the government, the most celebrated of which was that of the Gobelins. Land taxes were lessened and more justly assessed; the excise upon salt was reduced; highways and roads were kept in repair, and new ones established; the Atlantic was united to the Mediterranean by the canal of Languedoc, and water communications were extended through nearly all parts of France. He was appointed

minister of the navy in 1669, and the French fleet, which then consisted of but 50 ships, numbered in a few years 198 men-of-war. Colbert also encouraged literature, science, and art. He founded the academies of inscriptions and belles-lettres, of science, and of architecture, sculpture, and painting, and at Rome reëstablished the French school of painting. He founded the observatory and the *jardin des plantes;* increased the royal library and the collection of coins and medals; bestowed pensions on eminent artists and scholars; and enriched Paris with the garden of the Tuileries and the colonnade of the Louvre, and with many quays, bridges, boulevards, public buildings, triumphal arches, and monuments. He opposed the wars and follies of Louis XIV., and succeeded for many years in restraining him within the limits of reasonable ambition. But about 1670 his favor was on the wane, and the influence of Louvois, the minister of war, prevailed. Then commenced a series of European wars that partly exhausted the wealth and resources accumulated by Colbert. He continued however serving the government, but the reckless course which was now pursued impaired his usefulness. He had been so long engaged in public affairs that he was loath to retire, but he suffered much from the ingratitude of the king. During his last moments he gave vent to his feelings by saying: "If I had done for God what I have for that man (Louis XIV.), I would have more than deserved salvation, and I do not know now what will become of me." Thus died one of the greatest ministers of France. He was hated by his colleagues, perhaps by the king, and certainly by the people, who held him responsible for taxes which had been established notwithstanding his remonstrances, and for vexations of which he was not the author. To protect his funeral against the attacks of the mob, it took place at night, attended by a military escort. A monument was erected by his family in the church of St. Eustace; and his statue was placed in 1844 in the Palais Bourbon. Posterity has placed Colbert among the most eminent statesmen; and although his commercial policy has been the object of severe animadversion, it cannot be denied that it was perhaps the best adapted to his time and country. An edition of the *Lettres, instructions et mémoires de Colbert* was published at Paris in 1872. **II. Jean Baptiste,** marquis de Seignelay, son of the preceding, born in Paris in 1651, died Nov. 3, 1690. He succeeded his father as minister of the navy, and raised the French navy to its highest power by his capacity and energy. In 1684 he led in person the maritime expedition against Genoa.

COLBURN, Warren, an American mathematician, born at Dedham, Mass., March 1, 1793, died at Lowell, Sept. 15, 1833. He was the eldest son of a large family. His parents were poor, and during his childhood made frequent removals to different manufacturing villages, where Warren as well as some of the other children found employment in the factories. He early manifested a remarkable taste for mathematics, and having acquired the trade of a machinist, he entered Harvard college in 1816. He graduated in 1820, and soon afterward opened a select school in Boston. In the autumn of 1821 the first edition of his "First Lessons in Mental Arithmetic" was issued. While in college the necessity of such a work had been forced upon his mind, and its plan digested. He was accustomed to say that "the pupils who were under his tuition made his arithmetic for him;" that the questions they asked, and the necessary answers and explanations which he gave in reply, were embodied in that book. No other elementary work on arithmetic ever had such a sale. It has been translated into most of the languages of Europe, and into several of those of India. After teaching nearly three years, he accepted the situation of superintendent of the Boston manufacturing company at Waltham, in April, 1823; and in August, 1824, he was appointed superintendent of the Merrimack manufacturing company at Lowell. Here he projected a system of lectures of an instructive character, presenting commerce and useful subjects in such a way as to gain attention. In the autumn of 1825 he commenced a course of lectures on the natural history of animals. This he followed in subsequent years with lectures on light, the eye, the seasons, electricity, hydraulics, astronomy, &c. His "Sequel" had been published just before he left Waltham. In 1828 he published his "Algebra." In May, 1827, he was elected a fellow of the American academy of arts and sciences. He was also for a number of years one of the examining committee on mathematics in Harvard college, and some time superintendent of schools at Lowell.

COLBURN, Zerah, an arithmetical prodigy, born at Cabot, Vt., Sept. 1, 1804, died March 2, 1840. In his 6th year he began to give evidence of those extraordinary powers of computation which afterward excited the wonder of the learned and curious in the United States and Europe. His father decided to exhibit them in public, and accordingly left Vermont with Zerah in the winter of 1810–'11. Passing through Hanover, N. H., Dr. Wheelock, then president of Dartmouth college, offered to take upon himself the whole care and expense of his education, but his father rejected the offer. At Boston the performances of the boy excited much attention. He was visited by the professors of Harvard college, and by eminent men in all professions, and the newspapers were filled with articles concerning his wonderful powers of computation. Questions in multiplication of four and five places of figures, reduction, rule of three, practice, involution, evolution, compound fractions, and the obtaining of factors even of large numbers, were answered with accuracy and with a rapidity to which the most experienced mathematicians could not at-

tain. At this time he was unable to give any account of the mental processes by which these results were reached; but a few years later he could explain them satisfactorily, and from these explanations it appeared that his processes did not differ materially from those ordinarily adopted in mental computation. Among the questions proposed to him were the following: How many days and hours in 1,811 years? His answer, given in 20 seconds, was 661,015 days, 15,864,360 hours. How many seconds in 11 years? The answer, given in four seconds, was 346,896,000. When 8 or 9 years of age, he gave answers with a delay of but a few seconds to such questions as these: What is the square of 999,999? Multiply the square twice by 49 and once by 25. (The answer requires 17 figures.) What are the factors of 4,294,967,297? ($=2^{32}+1$). The French mathematicians had announced this as a prime number. Colburn immediately gave $641 \times 6{,}700{,}417$. What are the factors of 247,483? He replied, "941 and 263, which are the only factors." The rapidity of his mental processes and the power of his memory must have been at this time almost inconceivable. After leaving Boston, Mr. Colburn exhibited his son for money throughout the middle and part of the southern states, and in January, 1812, sailed with him for England. After travelling over England, Scotland, and Ireland, they spent 18 months in Paris. Here young Colburn was placed in the *lycée Napoléon*, but was soon removed by his father, who at length, in 1816, returned to England in the deepest penury. The earl of Bristol soon became interested in the boy, and placed him in Westminster school, where he remained till 1819. In consequence of his father's refusal to comply with certain arrangements proposed by the earl, he was removed from Westminster, and Mr. Colburn now proposed to his son that he should qualify himself to become an actor. Accordingly, he studied for this profession, and was for a few months under the tuition of Charles Kemble. His first appearance, however, satisfied both his instructor and himself that he was not adapted for the stage, and accordingly he accepted a situation as assistant in a school, and soon afterward commenced a school of his own. To this he added the performing of some astronomical calculations for Dr. Thomas Young, then secretary of the board of longitude. In 1824, on the death of his father, he was enabled by the earl of Bristol and other friends to return to America. He went to Fairfield, N. Y., as assistant teacher of an academy; but not being pleased with his situation, he removed in March following to Burlington, Vt., where he taught French, pursuing his studies at the same time in the university. Toward the end of 1825 he connected himself with the Methodist church, and after nine years of service as an itinerant preacher, he settled in Norwich, Vt., in 1835, where he was soon after appointed professor of languages in Norwich university. In 1833 he published his autobiography. From this it appears that his faculty of computation left him about the time he reached the age of manhood; and aside from his early talent for calculation, he gave no evidence of remarkable abilities.

COLBY, Thomas, an English engineer, born at Rochester, Sept. 1, 1784, died in Liverpool, Oct. 9, 1852. He was educated at the royal military academy at Woolwich, and received his first commission as second lieutenant of engineers when 17 years old. The next year he became chief personal assistant of Captain Mudge, then superintendent of the ordnance survey. During the four following years he passed the summers in making observations at various prominent points, and the winters in preparing the results for publication and superintending the engraving of the ordnance maps. He became identified with the great trigonometrical survey of England, and upon the publication of the third volume of the records his name appeared associated with that of Col. Mudge upon the title page. In 1807 he was raised to the rank of captain. In 1813 it was determined to extend the meridian line into Scotland, and Capt. Colby was placed in charge of the work. In 1817 he accompanied Biot, a scientific agent of the French government, on his trip to Shetland, and afterward assisted in connecting the French with the English triangulation by observations across the straits of Dover. Upon the death of Gen. Mudge in 1820, Colby was appointed his successor as superintendent of the survey and in the board of longitude, was elected a fellow of the royal society, and promoted to the rank of major, and soon after to that of lieutenant colonel. Having undertaken a thorough survey of Ireland, he received the sanction of the duke of Wellington for raising and training three companies of sappers and miners to aid in the work. After a series of experiments on the heating and cooling of metallic rods, he succeeded in so uniting a bar of brass and iron that its extremities always remained the same distance apart whatever the temperature. With this "compensation bar" he measured a base line of eight miles on the south side of Lough Foyle; and such was the exactitude obtained that the same apparatus has since been used in the remeasurement of the English bases, in measuring a base at the Cape of Good Hope, and also those required for the great arc of the meridian in India. Col. Colby continued his superintendence of the survey till his promotion in 1846 to the grade of major general, when by the regulations of the service his active connection with it ended. He had brought English maps to an excellence not before attained, marking the seconds of latitude and longitude on the margin, and introducing into them geological facts and features.

COLCHESTER, a municipal and parliamentary borough, market town, and river port of Essex, England, on the river Colne, and the Great

Eastern railway, 51 m. N. E. of London; pop. in 1871, 26,361. It is built on a hill close to the river, and has three bridges, one of which is of cast iron. Among the public buildings are eight churches, one built before the time of Edward II. and another mentioned in the Domesday Book, nine dissenting chapels, a



Abbey Gate.

library, and the ruins of an old castle, of a Benedictine abbey founded under Henry I., and of St. Botolph's priory, an interesting structure of the 12th century. There are many charitable and other schools, a mechanics' institute, a literary and scientific association with a museum, a botanical and horticultural society, several almshouses, hospitals, and other charities, and a theatre. The woollen



St. Botolph's Priory.

manufacture, formerly important, was subsequently superseded by that of silk, which employs 300 or 400 hands. Some velvet is also manufactured. The most important branch of industry is the oyster fishery, for which the town has long been noted. There are iron and brass founderies, machine shops, rope, sail, and carriage factories, breweries, vinegar works, &c. Colchester was made a bonding port in 1808, but the custom house and warehouses are at Hythe, one of its suburbs, situated a short distance below, at the head of navigation on the Colne. The foreign commerce is inconsiderable, but a large coasting trade is carried on with London and the northern counties.— Colchester is supposed to be the Camulodunum of the Romans, and there is probably no town in England richer in remains of that people. Coins, vases, urns, lamps of bronze and pottery, rings, bracelets, tessellated pavements, and various other antiquities, have been found near it in great profusion. The Saxons, uniting the Latin *castra* with the name of the river on which it stands, called it Colne Ceaster. It was fortified by Edward the Elder, and at the time of the Domesday survey was a place of no small note. It was taken and occupied by the royalists in 1648 after a memorable siege, and was soon after blockaded by the parliamentarians, to whom the garrison surrendered after 11 weeks' resistance.

COLCHESTER, a county of Nova Scotia, bounded N. by Northumberland strait, and S. and S. W. by Mines basin, Cobequid bay, and the Shubenacadie river; area, 1,300 sq. m.; pop. in 1871, 23,331. It is intersected by numerous rivers, and traversed by the Cobequid range of hills. The soil is of variable fertility. Among the minerals are coal, gypsum, and limestone. The principal occupations are agriculture, lumbering, and ship building. The county was originally settled by the French, who on their expulsion were replaced by emigrants from the north of Ireland and Massachusetts. Capital, Truro.

COLCHESTER, Lord. See Abbot, Charles.

COLCHICUM (from Colchis, a country where it abounded), a common name of the *colchicum autumnale* (Linn.), or meadow saffron, a perennial bulbous-rooted plant, growing naturally in the temperate climates of Europe, and cultivated for its medicinal properties. It prefers wet meadows, which it often covers with its bright, purple, crocus-like blossoms. The bulb or corm resembles that of a tulip, and feeds the growing plant, being exhausted and replaced every year. Colchicum closely resembles the autumn crocus, from which it is distinguished by having six stamens instead of three, and three styles instead of one. The corm, seeds, and flowers all possess the medicinal properties of the plant, which depend upon the alkaloid, colchicia. From the corm and seeds are prepared wines, extracts, and tinctures.—Colchicum is employed in the treatment of gout and rheumatism, and allied affections. The preparation for gout, celebrated under the name of *eau médicinale d'Husson*, is said to be a vinous infusion of colchicum It materially lessens the duration of the paroxysms of gout, but is apt when too freely used to depress the system and thereby induce a more speedy recurrence of the disease. It

has been shown to increase not only the water, but the organic solid constituents of the urine; this increase, however, is not due to uric acid, as might perhaps be supposed from its action in gout. It has a marked sedative action upon the heart, stimulates the secretions, and is apt to excite nausea and catharsis. While there is no doubt that advantage may be obtained from the administration of colchicum in certain forms or conditions of gout, rheumatic gout, and rheumatism, yet grave disadvantages are apt to result if it is given injudiciously. It should never be administered in the asthenic forms of gout or rheumatism; the doses should always be small at first, and gradually increased; it should not be allowed to excite continued nausea, or vomiting or purging; it should not be given for more than a week or ten days continuously, as its effects are apt to accumulate in the system; it should rarely or never be given to aged people or young children. In fine, its appropriate use is limited to the sthenic forms of gout and acute forms of rheumatism that occasionally occur in people of robust constitution, who are in the prime of life. It should be remembered that where neuralgia occurs in persons who come of a gouty or rheumatic race, it sometimes yields to a judicious course of colchicum. The dose of the acetic extract of colchicum is from 1 to 2 grains three times a day; of the wine of the root from 10 to 20 drops, and of the wine of the seeds 20 to 30 drops, three times a day. The tincture of the seeds may be given in the dose of half a teaspoonful to a teaspoonful.



Colchicum.

COLCHIS (modern Mingrelia and part of Imerethia), an ancient country of Asia, at the E. extremity of the Euxine, bounded N. by the Caucasus, E. and S. E. by Iberia and the Moschian mountains, S. by Armenia, S. W. by Pontus, and W. by the Euxine. Colchis was celebrated in Greek mythology as the destination of the Argonauts, and as the country of Medea and the golden fleece. Its early history is involved in obscurity. The early Greek writers speak of it only under the name of Æa, the seat of King Æetes. Cyrus or his immediate successor seems to have annexed it to the Persian empire; but its inhabitants soon recovered their liberty, and erected their territory into an independent state. During the Mithridatic war it was tributary to the kingdom of Pontus. On the overthrow of Mithridates it was annexed by the Romans; and after the conclusion of the civil wars it was incorporated with Pontus, and subjected to the rule of a proconsul. Under the later emperors it was known as Lazica, from Lazi, a predominant tribe. In A. D. 572 the Colchians rose in rebellion, and joined the Persians against the Byzantine empire. Colchis, according to Strabo, abounded in fruit of every kind, and in material for ship building. It was inhabited by a number of tribes, whose dark complexion, crispy hair, language, and customs indicated, in the opinion of Herodotus, their Egyptian origin. They were famous for the manufacture of linen. Their chief town was Dioscurias. The Phasis (now the Rion) is the celebrated river of this country.

COLD. See CATARRH.

COLDEN. I. Cadwallader, a physician and statesman, born in Dunse, Scotland, Feb. 17, 1688, died on Long Island, N. Y., Sept. 28, 1776. He studied at Edinburgh, and at the age of 20 emigrated to America, and practised as a physician for some years in Pennsylvania. He then visited England, but returned to Pennsylvania in 1716, and in 1718, at the solicitation of Gov. Hunter, settled in New York. The next year he was appointed the first surveyor general of the colony, became in 1720 a member of the king's council of the province, and in 1761 was appointed lieutenant governor of New York, and held the commission during the remainder of his life. He was repeatedly placed at the head of the government by vacancies in the governorship. He published works upon a variety of subjects, medicine, philosophy, and history; his "History of the Five Indian Nations of Canada, depending on New York" (New York, 1727; 3d ed., 2 vols., London, 1755) is especially worthy of mention; but his favorite pursuit was botany, and he sent to Linnæus several hundred American plants, of which that botanist published descriptions. **II. Cadwallader David,** grandson of the preceding, born near Flushing, L. I., April 4, 1769, died at Jersey City, Feb. 7, 1834. He commenced the practice of law in New York in January, 1791, removed his office for a time to Poughkeepsie, and in 1796 resumed his station at the New York bar, where he received the appointment of district attorney, and soon became eminent in the profession, which he practised for several years, intermitted only by a voyage to France for the benefit of his health. In 1812 he was colonel of a regiment of volunteers; in 1818 was elected a member of the house of assembly; in the same year

succeeded De Witt Clinton as mayor of New York city; in 1822 was elected to congress, and in 1824 to the senate of his own state, from which he withdrew in 1827. He was an active promoter of internal improvements, his name being especially connected with the completion of the Erie and Morris canals. Public education and the reformation of juvenile offenders were also subjects to which he devoted much attention. For many years he was one of the governors of the New York hospital. He wrote a biography of Robert Fulton (1817) and "Memoir of the Celebration of the Opening of the New York Canals" (1825).

COLD HARBOR, Battles of. See CHICKAHOMINY.

COLDSTREAM, a town of Berwickshire, Scotland, 12 m. S. W. of Berwick; pop. about 2,200. It is situated on the left bank of the Tweed, here spanned by a handsome bridge. Besides the parish church, there are several places of worship, and a number of schools and libraries. The principal trade is in agricultural products and in cattle. Adjoining the town is the celebrated ford of the Tweed which was repeatedly crossed by the invading armies of both Scotland and England. Monk raised a corps here in 1659–'60, which was at first known as Monk's regiment, but subsequently it was included, under the name of Coldstream guards, in the brigade which parliament allowed to Charles II.; it retains this designation as a regiment in the foot guards or household brigade, and is one of the oldest corps in the British army.

COLDWATER, a city, the capital of Branch co., Michigan, on the Coldwater river and the Michigan Southern railroad, 103 m. W. S. W. of Detroit; pop. in 1870, 4,381. It is the commercial centre of a fertile country. The river affords good water power, which has been improved. There are six or eight churches, two banks, two weekly newspapers, and a monthly periodical. In 1871 there were 18 schools, of which one was a high school, with 20 teachers and 1,128 pupils.

COLE, a central county of Missouri, bounded N. E. by the Missouri river, S. E. by the Osage, which joins the Missouri at the E. extremity of the county, and drained by Moreau creek; area, 410 sq. m.; pop. in 1870, 10,292, of whom 1,251 were colored. It has an undulating surface, and a generally fertile soil, though in some places the land is too rocky for cultivation. Timber, limestone, and buhrstone are abundant. The Pacific railroad of Missouri passes through it. The chief productions in 1870 were 115,299 bushels of wheat, 165,550 of Indian corn, 60,668 of oats, 24,599 of potatoes, and 2,798 tons of hay. There were 1,570 horses, 1,520 milch cows, 2,496 other cattle, 4,701 sheep, and 8,402 swine; 2 manufactories of boots and shoes, 1 of carriages and wagons, 1 of furniture, 1 of saddlery and harness, 3 flour mills, 2 saw mills, and 3 breweries. Capital, Jefferson City, which is also the capital of the state.

COLE, Thomas, an American painter, born at Bolton-le-Moor, Lancashire, England, Feb. 1, 1801, died at Catskill, N. Y., Feb. 11, 1848. His father, a small woollen manufacturer, after repeated reverses in business, emigrated to America in 1819, and established himself in Steubenville, Ohio. The artist's childhood was unmarked by striking incidents, but the direction of his tastes could be seen in his employment as a designer in a print factory, and in making woodcuts for printers. A fine organization and great fondness for poetry and scenery were his chief characteristics. Two years were spent at Steubenville in the employment of his father, who kept a small shop, when a portrait painter named Stein passed through the town in the pursuit of his vocation, and Cole, fascinated by the sight of his canvas and colors, at once determined to become a painter. With rude materials, mostly prepared by himself, he attempted landscapes and miscellaneous subjects, and finally portraits. In February, 1822, he went on foot to Clairsville, where he proposed to establish himself as a portrait painter. The western states did not then afford a promising field for artists, and both at Clairsville and Zanesville, which he subsequently visited, he not only failed to meet with any encouragement, but when he rejoined his family in the spring at Pittsburgh he was in debt for the means of support during his absence. Undiscouraged by reverses, he spent the spring and summer of 1823 in making careful studies from nature in the vicinity of Pittsburgh, and the autumn saw him established in Philadelphia as a landscape painter. The ensuing winter was one of great privation. He painted small landscapes and comic pieces, and was often glad to find regular employment in ornamenting chairs, brushes, and japanned ware. His powers however were rapidly developing, and in the works of this period may be seen the germ of that rich and harmonious style for which he was afterward distinguished. In the spring of 1825 he removed to New York, where his family were now established, and fixed his studio in the garret of his father's house in Greenwich street. The scenery of the Hudson called out all his artistic enthusiasm, and during a visit to the Catskills in the autumn of this year he painted several landscapes, which were exhibited on his return to the city. These pictures attracted the attention and praise of Durand, Dunlap, and Trumbull, and "from that time," says Bryant in his funeral oration on Cole, "he had a fixed reputation, and was numbered among the men of whom our country has reason to be proud." The next four years found Cole in the enjoyment of great prosperity; commissions flowed in upon him from all quarters; and visits to the White mountains, the Catskills, and Niagara afforded varied and striking studies. But in the midst of a career from which few artists would have cared to deviate, Cole felt that the literal re-

production of natural scenery, however profitable it might be, could not satisfy him; and he determined to enter the higher sphere of imaginative composition. The fruit of this determination was witnessed in his pictures of the "Garden of Eden" and the "Expulsion," exhibited in 1828. The merit of these works was admitted, but they failed to satisfy the public taste so completely as his simple landscapes. In June, 1829, Cole sailed for Europe, and for two years painted in London, where he contributed to several of the annual exhibitions; but from ignorance of the peculiar features of American scenery, or the injustice of hanging committees, his pictures were either regarded as exaggerations of nature, or were so disadvantageously placed that they attracted less attention than their merits deserved. In May, 1831, he visited Florence, and made careful studies in the chief galleries. In the succeeding February he visited Rome, and returning to Florence in July, worked with an assiduity which surprised himself, finishing more pictures in three months than he had done in double that time before. Among these were views on the Arno and in the vicinity of Rome and Naples. The influence of Italian scenery and of his studies of old Italian art had meanwhile wrought a change in his style, and the public were disappointed with these works upon their arrival in America, complaining that the artist had lost his first freshness and originality, and that his Italian landscapes were overcharged copies from the old masters. In November, 1832, he returned to New York, and during the ensuing year, while at Catskill, he received from Mr. Luman Reed of New York an order to fill an entire room of his house with pictures. The magnitude of the undertaking required several years of undivided labor, the most of which was devoted to the "Course of Empire," a series of five pictures, in which are presented, to use his own words, "an illustration of the history of the human race, as well as an epitome of man, showing the natural changes of landscape, and those effected by man in his progress from barbarism to civilization, to luxury, to the vicious state, or state of destruction, and to the state of ruin or desolation." The series has been called "a great epic poem." Mr. Reed died before the completion of the work, and at the distribution of his estate it was purchased by the New York gallery of fine arts, and is now in the gallery of the New York historical society. For the next few years Cole was engaged upon works of a similar class, chief among which were the "Departure" and the "Return," the "Dream of Arcadia," and the "Voyage of Life." The last, an allegorical series of four pictures, representing childhood, youth, manhood, and old age, are among the most popular of his works, and through the engravings by Smillie are most extensively known. They are now owned by J. Taylor Johnston of New York. In November, 1836, he married Miss Maria Bartow. The autumn of 1841 found him again in Rome, where he executed a duplicate of his "Voyage of Life," which elicited the praise of Thorwaldsen, who visited his studio repeatedly to see it. In the succeeding spring he travelled over many parts of Sicily, and returned to New York in the summer. An exhibition of his works was opened in Boston and New York in the winter of 1843–'4, for which he painted a number of Sicilian views of great beauty, including a large picture of Mount Etna from Taormina, executed in five days; this is now in the Wadsworth gallery, Hartford, Conn., as are also the "View of the White Mountains" and the "View of Northwest Bay on Lake Winnipiseogee." The "Angel appearing to Shepherds" is in the Boston Athenæum. Thenceforth until his death he painted with industry, executing among other works the "Cross in the Wilderness," "L'Allegro" and "Il Penseroso," "Home in the Woods," the "Hunter's Return," the "Mountain Ford," &c. The "Cross and the World," a work in two parts, dictated by earnest religious conviction, he left unfinished. His life and genius were made the subject of a funeral oration by his friend William Cullen Bryant. In all the relations of life Cole's amiability and generosity were engagingly displayed, and to those who could sympathize with his enthusiastic and impressible nature, he especially endeared himself. His life was one of singular purity, and in the latter part of it he manifested a sincere and unostentatious piety. His poetic feeling frequently found expression in rhythmical forms, and his miscellaneous papers in prose and verse, few of which were ever made public, possess considerable literary merit.

COLE, Vicat. See supplement.

COLEBROOKE, Henry Thomas, an English orientalist, born in London, June 15, 1765, died there in March, 1837. He was the son of Sir George Colebrooke, who in 1769 was appointed chairman of the board of directors of the East India company. His early education was conducted by a private tutor. In 1782 he was appointed to a writership in the East India company, and in 1783 he arrived in Madras. He soon went to Calcutta, and was employed in the company's board of accounts. In 1786 he was appointed assistant collector of revenue in Tirhoot. In the mean time he had devoted much attention to the study of Sanskrit, but his interest in it does not seem to have been so much literary as scientific, his love of astronomy and mathematics leading him to desire to ascertain what the Hindoos knew in regard to these sciences. In 1789 he was transferred to Purneah, and in 1793 to Nattore. He had now become interested in the religion, philosophy, and laws of the Hindoos. In 1794 he presented to the Asiatic society his first paper, "On the Duties of a Faithful Hindoo Widow." At the same time his views on commerce and finance were far in advance of his age; and though a servant of the East India

company, he favored the withdrawal of its special privileges, and advocated free trade between India and England. Just after the death of Sir William Jones in 1794, Colebrooke was transferred from the financial to the judicial branch of the service. The code of laws compiled under the direction of Warren Hastings, and published in 1776, being very imperfect, at the solicitation of Sir William Jones the government had determined to have a more extensive and accurate compilation made. This was performed chiefly by a learned pundit, Jagannatha, and was to have been translated by Jones, but the task was committed to Colebrooke. The work was published under the title, "A Digest of Hindu Law on Contracts and Successions, with a Commentary by Jagannatha" (4 vols. 4to, Calcutta, 1797–'8). From that time until his death Colebrooke stands forth as the first of European Sanskrit scholars. While occupied with this work he had resided at Mirzapore, near Benares, the chief seat of Hindoo learning. In 1798 he was sent on a diplomatic mission to Nagpore, the capital of Berar; in 1801 he returned to Mirzapore, and shortly after was summoned to Calcutta, and appointed a member of the court of appeal. He was also appointed professor of Sanskrit in the college then recently established at Fort William, but he took no active part in teaching, acting rather as a director of the course of studies and as an examiner. In the same year appeared his essay on the Sanskrit and Prakrit languages, which showed that he was bringing within the range of his studies every part of Hindoo literature. In 1805 he became president of the court of appeal. During this interval from 1801 to 1805 he worked on the supplement to his "Digest of Laws," and at deciphering ancient inscriptions, assisted Roxburgh in the preparation of his "Flora Indica," wrote the first volume of his "Grammar of the Sanskrit Language," and prepared several essays. The first volume of his "Sanskrit Grammar" was published in 1805, and though it was never finished, it forms the best existing introduction to the study of the native grammarians. In the same year he published his famous essay "On the Vedas or Sacred Writings of the Hindus," which will always be regarded as a landmark in the history of the study of Sanskrit literature by Europeans. In 1806 he became president of the Asiatic society, and he contributed to its volumes essays "On the Sect of Jina," "On the Indian and Arabic Divisions of the Zodiac," and various others. The highest honor of a civilian in the service of the East India company, a seat in council, was conferred upon him in the same year. In 1810 he published translations of two important treatises on the Hindoo law of inheritance. In 1815, after having resided in India 33 years, he returned to England. The remainder of his life was devoted almost uninterruptedly to the prosecution and promotion of Sanskrit studies. In 1817 he published "Algebra, with Arithmetic and Mensuration, from the Sanskrit of Brahmagupta and Bhāskara," preceded by a dissertation on the state of the sciences as known to the Hindoos. In the following year he presented to the East India company his collection of MSS., one of the most valuable ever brought to Europe. Pecuniary matters compelled him to spend a year at the Cape of Good Hope, and on his return to England in 1822 he was elected president of the astronomical society, succeeding Sir William Herschel. He also exerted himself to found the royal Asiatic society, of which he declined the presidency, but became its most active member; and for several succeeding years he contributed to its volumes essays upon the philosophy of the Hindoos, the value of which is yet unimpaired. These were his last contributions to the study of oriental literature. Many of his works yet remain unpublished. A collection of his miscellaneous essays was published in London in 1837; a second edition appeared in 1858; and in 1872 a third, in 3 vols. 8vo, including a selection from his correspondence, and a biography by his son, Sir Edward Colebrooke.

COLEMAN, a W. county of Texas, watered by Pecan bayou, Jim Ned creek, and other affluents of the Colorado; area, 1,000 sq. m.; pop. in 1870, 347, of whom 7 were colored. The surface is broken and rocky, adapted to stock-raising. Timber is scarce, and the climate dry and salubrious. The chief productions in 1870 were 5,050 bushels of Indian corn, and 35 tons of hay. There were 14,198 cattle. Capital, Camp Colorado.

COLEMAN, William, an American journalist, born in Boston, Feb. 14, 1766, died in New York, July 13, 1829. He was educated for the bar, and commenced practice in Greenfield, Mass. During Shays's rebellion he took up arms against the insurgents. In 1794 he removed to New York, where for a short time he was a partner of Aaron Burr in the practice of law. Subsequently he was appointed reporter of the supreme court of the state of New York, a position which he lost after the defeat of the federal party in 1800. In 1801 Hamilton and other leading federalists conceived the idea of establishing a daily paper in the city of New York, and Coleman was selected to conduct it. The new organ, under the name of the "Evening Post," appeared Nov. 16, 1801, and for nearly 20 years Coleman remained its sole editor. His connection with it ceased only with his death. His attachment to federalist principles never wavered, and even after the party became extinct he continued to be its warm defender. He enjoyed the reputation of an able, honest, and fearless man.

COLENSO, John William, D. D., an English clergyman and colonial bishop, born in Cornwall, Jan. 24, 1814. He took his degree at St. John's college, Cambridge, with distinguished honor, in 1836, and became fellow of his college. In 1838 he became assistant master at

Harrow, in 1842 tutor of St. John's college, and in 1846 rector of Forncett St. Mary. In 1854 he was appointed bishop of Natal, S. Africa. He had previously published text books in arithmetic, algebra, and trigonometry, a volume of sermons, and an edition of the communion service, with selections from the writings of F. D. Maurice. In 1861 he published "The Epistle to the Romans, newly translated, and explained from a Missionary Point of View," and in 1862 "The Pentateuch and Book of Joshua, Critically Examined." This last work, in which he called in question many of the statements contained in those books, excited much animadversion, and was formally condemned by the convocation of the province of Canterbury, and he was declared by the bishop of Cape Town to be deposed from the office of bishop. An appeal to the privy council was taken upon the ground that the crown had no right to create a bishop in any colony where there was an independent legislature, and that therefore there was in law no bishop either of Cape Town or Natal. In England he found many sympathizers, and previous to his return to Natal in 1865 a public meeting was held, and he received a testimonial of £3,300. In 1866 he published a volume entitled "Natal Sermons," and several papers justifying his course in the controversy. In January, 1869, the Rev. William Kenneth Macrorie was consecrated bishop of Maritzburg in Natal, it being held that the see was duly vacated by his predecessor; but in 1872 the colonial assembly passed an act vesting in Dr. Colenso the property belonging to the see of Natal. In 1871 he published "The new Bible Commentary, by Bishops and other Clergy of the Anglican Church, critically examined." In 1872 appeared an abridgment of his work on the Pentateuch, and in 1873 "Lectures on the Pentateuch and the Moabite Stone," with appendices.

COLEOPTERA. See BEETLE.

COLERAINE, a maritime town and parliamentary borough of Ireland, county of Londonderry, situated on both sides of the river Bann, 4 m. from the sea, and 47 m. N. W. of Belfast, on the railway from Belfast to Portrush; pop. in 1871, 6,236. It is distinguished for the manufacture of a fine quality of linen called coleraines. It is fast improving in spinning and weaving factories, and also in pork-curing establishments. There is regular connection by steamer with Toome, and arrangements were completed at the beginning of 1873 to increase the depth of water in the river Bann, so as to enable larger vessels to discharge their cargoes on the quay of Coleraine. It is connected by a handsome bridge over the Bann with the village of Killowen or Waterside.

COLERIDGE, Hartley, the eldest son of Samuel Taylor Coleridge, born at Clevedon, near Bristol, Sept. 19, 1796, died at Rydal Water, Jan. 6, 1849. His birth was commemorated by his father in two sonnets, and his early peculiarities were described and his wayward career almost prophesied in an exquisite poem addressed to him when six years old by Wordsworth. He was reared in the lake district in the north of England, and after a visit to London in 1807 he and his brother Derwent became day scholars of a clergyman at Ambleside. Yet the best part of his education was by intercourse with the friends of his father; and he speaks of himself as having been formed by the living voice of Coleridge, Southey, Wordsworth, Lloyd, Wilson, and De Quincey. In his school days he showed both imaginative and conversational powers by weaving long and wild stories, the recital of which would occupy him and his listeners night after night for months. In 1815, having become a student at Merton college, Oxford, his accomplishments and brilliant conversation gained him numerous invitations to social gatherings, and he acquired habits of wine-drinking over which he afterward had little control. He passed a highly honorable examination for his degree in 1818, and obtained a fellowship at Oriel college; but before the close of his probationary year his intemperance caused the forfeiture of this position. The punishment fell heavily upon his sensitive temperament, and in his despondency and morbid consciousness of shame he resisted less and less the weakness which had caused the overthrow of his fortunes. He left Oxford and resided for two years in London, contributing his first sonnets to the "London Magazine." A scheme to receive pupils at Ambleside failed, and proved that he was unfit for any future exertion of the kind; yet he remained till his death in the lake district, excepting a short residence at Leeds, beloved by all his neighbors and watched over by the family in whose house he lived. His father expressed in his will great solicitude to secure to him the tranquillity necessary to the exercise of his literary talents, and by a bequest provided him with "the continued means of a home." Wordsworth was his near neighbor, and was most attentive to the child-like man whose life he had traced from the cradle. Hartley was a diligent reader, a deep thinker, and an easy writer. His verse and his prose are alike exquisite. His sonnets are among the finest in the English language, and his volume of biography, the "Lives of Northern Worthies," is written in a pleasant, vivacious style, with a vein of fine philosophy. During his latter years he wrote a "Life of Massinger," and many short poems. His grave is in the Grasmere churchyard, by the side of that of Wordsworth.

COLERIDGE, Henry Nelson, an English lawyer and author, nephew of Samuel Taylor Coleridge, born about 1800, died Jan. 26, 1843. He was first a scholar at Eton, and became in due course a scholar and subsequently a fellow of King's college, Cambridge, where he received the degree of A. B. in 1823. While in college he won several prizes for Greek and Latin

odes, was recognized as a man of superior talent and scholarship, and was associated with Praed, Macaulay, Moultrie, and others of his university, in writing for "Knight's Quarterly Magazine." His papers, which were under the signature of "Joseph Haller," treated chiefly questions of English history, and were distinguished for their soundness of opinion and breadth of view. On account of ill health in 1825 he accompanied his uncle, the bishop of Barbadoes, on a voyage to that island, and on his return published a lively and very successful narrative of his experiences, under the title of "Six Months in the West Indies." He was called to the bar in 1826, and attained a good practice in the court of chancery, but devoted his leisure to an assiduous study of literature, and to the society and conversation of his uncle, S. T. Coleridge, whose daughter he married. In 1830 he published an "Introduction to the Study of the Greek Classic Poets." A more important task devolved upon him as literary executor of his uncle, and under his care the volumes of the "Table Talk," "Literary Remains," and "Confessions of an Inquiring Spirit" were given to the public. He endured a painful illness during the latter years of his life, and was often prostrated for months, but suffered with a cheerful mind.

COLERIDGE, Sir **John Duke,** an English lawyer, son of Sir John Taylor Coleridge, born in 1821. He studied at Eton and at Balliol college, Oxford, and became fellow of Exeter college. He was called to the bar in 1847, was recorder of Portsmouth from 1855 to 1865, and was made queen's counsel in 1861. In 1865 he was returned to parliament for Exeter, in 1868 was made solicitor general, and in 1871 attorney general. In 1873 he became chief justice of the court of common pleas.

COLERIDGE, Sir **John Taylor,** an English judge, nephew of Samuel Taylor Coleridge, born at Tiverton in 1790, died Feb. 11, 1876. He received his education at Corpus Christi college, Oxford, where he distinguished himself by brilliant scholarship, and in 1819 was called to the bar. For many years he went the western circuit, and in 1835 he was appointed a justice of the king's bench. For 23 years he occupied this post, retiring in June, 1858, when he was appointed a privy councillor. On the occasion of his retirement from the bench, in the presence of a full court, the attorney general addressed him in behalf of his associates at the bar in an impressive speech, to which Justice Coleridge feelingly replied. His remarks are memorable as containing advice to the younger members of the profession directly in conflict with the dogma of Lord Brougham, that the lawyer should know nobody but his client and no interests but his client's interests. He became editor of the "Quarterly Review" upon the retirement of Gifford in 1824; but resigned in 1825, on account of his professional engagements, and was succeeded by Lockhart. He published an annotated edition of Blackstone's "Commentaries" (4 vols., 1825), and a "Memoir of the Rev. John Keble" (1869).

COLERIDGE, Samuel Taylor, an English poet and philosopher, born at Ottery St. Mary, Devonshire, Oct. 21, 1772, died at Highgate, London, July 25, 1834. He was the youngest child of a learned and singularly amiable clergyman, and became an orphan at the age of nine years. By the kindness of a friend he was presented to Christ's hospital, in London, where he received the principal part of his education, and began a lifelong intimacy with Charles Lamb, who was one of his schoolfellows. His juvenile character prefigured his future career. He was a playless day-dreamer, solitary and uninterested in the ordinary amusements of childhood; yet he made great advances in classical knowledge, and was early distinguished by rare powers of discourse. Charles Lamb speaks of him as "the inspired charity boy, to whom the casual passer through the cloisters listened entranced with admiration, as he unfolded in deep and sweet intonations the mysteries of Iamblichus or Plotinus, or recited the Greek of Homer or Pindar." Before his 15th year he had read through a London circulating library, catalogues, folios, and all, and had bewildered himself in metaphysical studies and in meditating on the problems of theology. So great was his pleasure in abstract speculations that he describes himself as having lost all interest in particular facts, in history or romance, and even poetry seemed insipid to him. Without ambition or worldly wisdom, he at one time proposed apprenticing himself to a shoemaker whose shop was near the school. In his 17th year the sonnets of William Lisle Bowles were presented to him, and such was his admiration of them that he used frequently to transcribe them for presents to the friends for whom he had most regard. These simple poems recalled his idealizing mind to a juster estimate and love of realities, and having in 1791 become deputy Grecian, or head scholar, at Christ's hospital, he obtained a presentation thence to Jesus college, Cambridge. He remained in the university but two years, during which he paid no attention to mathematics, but gained the prize for a Greek ode. At the outbreak of the French revolution he became obnoxious to his superiors from his acceptance of the revolutionary principles. With an enthusiastic and hopeful view of human nature, and an impetuous zeal in the cause of freedom, he hailed the early events of that epoch of continental history as the promise of a new era. His feelings at this period form the theme of one of his odes, entitled "France," and pronounced by Shelley the finest ode of modern times. Suddenly leaving Cambridge in the midst of his university career, he wandered about for a day or two in London, gave his last penny to a beggar, and enlisted in a regiment of cavalry under the assumed name of Comberback. The poet, however, made but an awkward dragoon, and wrote letters for his comrades while they attended to his horse and

accoutrements. After four months' service, a Latin sentence which he had inscribed on the stable wall under his saddle revealed his scholarship, and the captain of his troop, having succeeded in learning his real history, restored him to his friends. He now became associated at Bristol with two other poetical enthusiasts, Southey, a student from Oxford, and Lovell, a young Quaker. Southey, like Coleridge, was an ardent republican and Unitarian, and for his faith had just forfeited the honors of Oxford. These three conceived a splendid scheme of emigration. They determined to found amid the wilds of the Susquehanna a commonwealth which was to be free from the evils and turmoils which then agitated the world, in which a community of goods was to be enjoyed, and from which selfishness was to be proscribed. But this scheme of pantisocracy, as it was termed, failed from want of money and from other practical difficulties; and the three pantisocratists, having married in 1795 three sisters, the Misses Fricker of Bristol, began to turn their attention to the reformation of England. Coleridge had already collected a small volume of his juvenile poems, for which he had received 30 guineas from a benevolent and appreciative publisher, Mr. Joseph Cottle; and he now entered upon an undertaking from which he expected great results, namely, the establishment of a periodical in prose and verse to be entitled "The Watchman," and to advocate liberal opinions. He himself canvassed the northern manufacturing towns for subscribers, preaching wherever he stayed on Sunday in Unitarian chapels, and returned with a subscription list full of promise. Yet the periodical, owing partly to a want of punctuality in its issue, partly to its learned philosophical contents, and partly to the fact that its opinions were not those which its supporters had expected, was dropped at the 10th number with a loss. In 1796 Coleridge took a cottage at Nether Stowey, in Somersetshire, where his means were increased by receiving into his family a Cambridge friend and poet, Charles Lloyd, the son of a wealthy banker, who, merely from love and admiration, had proposed living with him. He published in 1796, in connection with Charles Lamb, a small volume of poems, the greater number of his own contributions to which had been written at earlier periods; and to a second edition in the next year verses were added by Lloyd. Wordsworth having moved to Allfoxden, about two miles from Stowey, the kindred feelings of the two poets united them in the closest friendship. They rambled together over the Somerset hills, discussing the principles of poetry and planning their famous lyrical ballads. It was in this happiest period of Coleridge's life that he wrote his most beautiful poetry, the first part of "Christabel," the "Ancient Mariner," and the "Ode to the Departing Year;" and a mutual resolution of the poets to write a play produced his tragedy of "Remorse." He received in 1798 an invitation to become a Unitarian minister in Shrewsbury, and preached his probation sermon there, the great impression produced by which has been recorded by Hazlitt, who was one of his audience; but he did not preach again. The munificence of Josiah Wedgwood enabled him to visit Germany, and immediately after the publication of the "Lyrical Ballads" he and Wordsworth set out upon the journey together. He attended the lectures of Blumenbach and Eichhorn at Göttingen, formed an acquaintance with Tieck, and obtained a familiarity with German literature and philosophy. At no other period of his life did he work so industriously as during his residence in Germany; and on his return in 1800 he brought back, in addition to his mental acquisitions, a large collection of materials for a life of Lessing. He passed six months in London engaged in translating Schiller's "Wallenstein," and in writing for the "Morning Post;" after which he joined Southey, who had settled at Keswick, amid the lakes and mountains of the north of England, in the neighborhood of Wordsworth, who resided at Grasmere. His opinions had now changed; the republican had become a royalist, and the Unitarian a devoted champion of the established church. In 1804 he went to Malta, hoping to improve his health, and acted as secretary to Sir Alexander Ball, the governor. He returned in 1806 by the way of Sicily and Italy, his health not improved; nor was improvement to be expected, since he went to Malta an opium eater, and returned with the habit growing upon him. His nominal residence from this time till 1810 was at Keswick, but his absences were frequent, and his returns, according to Southey, more incalculable than those of a comet. He was often with Wordsworth at Grasmere, was occasionally in London lecturing, and during the year 1809 was engaged in writing "The Friend," his second periodical, which extended to 27 numbers. In 1810 he left the lakes for London, and resided for a time with Mr. Basil Montagu. He then made his home for three or four years with Mr. Morgan at Hammersmith, and in 1816 placed himself under the care of Mr. Gillman, a surgeon at Highgate, in the hope that he might be broken of his fatal propensity to opium. In Mr. Gillman he found the kindest of friends, and lived in his house during the last 18 years of his life. It was here that he published the wild and wondrous tale of "Christabel," which had been written long before his second tragedy, entitled "Zapoyla," and several prose works, the principal of which were his "Statesman's Manual," two "Lay Sermons," "Biographia Literaria," and "Aids to Reflection." Here, too, he was visited by numerous friends and admirers, who came to listen to his marvellous conversation. The published volumes of his "Table Talk" can give but a faint idea of those extraordinary monologues which attracted many thoughtful

young men to the feet of the sage of Highgate. With an infirm will, he could not overcome the irksomeness of writing out his dreamy idealities and preternatural subtleties of thought; but the gentle excitement of a social circle loosed his powers, and he uttered his lightest fancies and most comprehensive speculations without impediment. His discourse can be judged now only by the effect which it is recorded to have produced upon the listeners, and in his happiest moods it must have been magnificent and most impressive.—The poems of Coleridge exhibit his manifold powers. They comprise tragedy, songs of love, strains of patriotism, and wild, shadowy tales of superstition; they are marked sometimes by a mysterious and wondrous imaginative witchery, sometimes by philosophical thought and retrospection; and their style is according to the subject, either most melodious and flowing, or severe and stately. Several of them are fragmentary, but have no other imperfection, all that there is of them being faultless. The "Rime of the Ancient Mariner," the "Hymn before Sunrise in the Vale of Chamouny," and the unfinished story of "Christabel," are unsurpassed in any language in vivid imagery, solemn intensity of feeling, and skilful modulation of verse. No other poems could so justly be termed purely, absolutely imaginative. The musical versification of "Christabel" delighted Byron and Scott, and was imitated by them both; it was the acknowledged model of the metre of the "Lay of the Last Minstrel." His translation of Schiller's "Wallenstein" is equally remarkable. His tragedy of "Remorse" was brought out with great success at Drury Lane in 1813, but exhibits scenery and sentiment rather than character, and has not since been revived. The prose writings of Coleridge embrace theology, metaphysical and political philosophy, and literary criticism. His philosophical, more than his poetical works, are marked by a splendid incompleteness, and much as they have served to stimulate and direct the minds of others, they do not contain a fully developed system. He was born a Platonist, and he could not rest content, with Locke, to seek all knowledge in phenomena, or with Paley, to seek all good in happiness. His familiarity with the philosophy of Germany, which he first introduced to the notice of British scholars, supplied to him more spiritual theories. Above the understanding which generalizes from the data of perception, and gathers laws from experience, he enthroned the reason which seizes immediately upon universal and necessary truths, and whose intuitions are more certain than sensible phenomena, and more authoritative than the promptings to happiness. It is the clearness and earnestness with which Coleridge has illustrated this truth that has given to his name its philosophical significance, and made him the prompter of many English and American divines and thinkers. He also defended enthusiastically but not clearly the self-determining power of the human will. Coleridge's critical pieces need only completeness to have been alone sufficient to establish his fame. His remarks upon numerous authors and passages scattered upon the margins of books were such as to make his friends always eager to lend him their books for his reading. His review of Mr. Wordsworth's poetry, in the "Biographia Literaria," is one of the most philosophical pieces of criticism in the language; and his lectures upon Shakespeare retain their place notwithstanding the many important works on that author which have more recently been published. The prose style of Coleridge is not always marked by that immaculate taste which distinguishes his poems, but is occasionally disfigured by obscurities and prolixities.—More important than the works which he executed are those which he planned. The life of Lessing, the dream of his German residence, was never really commenced. It was one of his later long-cherished schemes to compose a work of colossal proportions which should embrace the whole range of spiritual philosophy, show Christianity to be the only revelation of permanent and universal validity, unite the insulated fragments of truth, and reduce all knowledge into harmony. He also conceived an epic poem on the destruction of Jerusalem, a subject which would interest all Christendom as the siege of Troy interested Greece. His glowing conceptions and his ambition to achieve some great work, joined to that infirmity of will which made him recoil from effort, he himself has depicted with great pathos in a poem which he addressed to Wordsworth. His life ebbed away in the contemplation of mighty projects, and the legacy which he left to mankind, though a valuable one, was but a fragment from the mine of his genius.—The unpublished writings of Coleridge were carefully edited after his death by his nephew Henry Nelson Coleridge, his daughter Sara, and his son Derwent. All his works have been frequently republished separately. A collected edition, in nine volumes, with an introductory essay upon his philosophical and theological opinions, edited by the Rev. William T. Shedd, appeared in New York in 1853–'4. It also contains James Marsh's admirable preliminary essay to the "Aids to Reflection." The best illustrations of his life are found in the "Personal Recollections" of Joseph Cottle, and in the biographies and letters of his associates, Charles Lamb, Wordsworth, and Southey. The "Fragmentary Remains of Sir Humphry Davy," edited by his brother John Davy (London, 1858), contains letters by Coleridge.

COLERIDGE, Sara, the only daughter of Samuel Taylor Coleridge, born at Keswick, Dec. 22, 1802, died May 3, 1852. She is described as the inheritor of her father's genius, and her life until her marriage was passed at Keswick in diligent study, in mountain rambles with Wordsworth, and in lending literary assistance

to Southey. At the age of 19 she made an admirable English translation of Dobrizhoffer's "Account of the Abipones, an Equestrian People of Paraguay" (3 vols., 1822). In 1829 she married her cousin Henry Nelson Coleridge, and devoting herself to domestic duties, her next publication was entitled "Pretty Lessons for Little Children," which was primarily designed for her own children, but speedily passed through several editions. On the death of her father her husband was appointed his literary executor, and she assisted in editing his works; and after the death of her husband she took upon herself the whole of the important duty. She edited alone the "Aids to Reflection," "Notes on Shakespeare and the Dramatists," and "Essays on his own Times;" and the elaborate discourses on weighty matters which she affixed to these works manifest both her erudition and her critical and logical ability. The beautiful romance of "Phantasmion" (1837) reveals also her imaginative faculty, and, though not in verse, is poetry from beginning to end. Yet in the annotations upon the writings of her father will be found the best evidence of her rare gifts and acquirements, and the chief foundation of her literary reputation. A memoir of her life, with selections from her letters, by her daughter, was published in 1873.

COLES, a S. E. county of Illinois, intersected by Embarras river; area, 550 sq. m.; pop. in 1870, 25,235. The surface is diversified by forests and prairies; the soil is fertile. The Indianapolis and St. Louis railroad and the Chicago division of the Illinois Central pass through it. The chief productions in 1870 were 157,136 bushels of wheat, 2,133,111 of Indian corn, 315,954 of oats, 161,925 of potatoes, 22,371 tons of hay, 260,409 lbs. of butter, 59,017 of wool, and 50,102 gallons of sorghum molasses. There were 9,397 horses, 5,448 milch cows, 11,364 other cattle, 20,546 sheep, and 33,619 swine; 8 flour mills, 10 saw mills, 1 brewery, 2 manufactories of boots and shoes, 1 of agricultural implements, 1 of bricks, 17 of carriages and wagons, 3 of furniture, 1 of iron castings, 4 of marble and stone work, 7 of saddlery and harness, 5 of tin, copper, and sheet-iron ware, 2 of tobacco and snuff, and 2 of woollen goods. Capital, Charleston.

COLES, Cowper Phipps, an English naval officer, born in 1819, died at sea, Sept. 7, 1870. He entered the navy in 1831, and served with distinction on various stations, and particularly in the naval attack upon Sebastopol in October, 1854. He claimed to be the inventor of the system of revolving turrets for the protection of the guns in naval warfare. He says that the idea was suggested to him during the Crimean war, and that in 1855 he sent to the British admiralty drawings for an armored vessel of light draught, "the guns to be protected by a stationary hemispherical tower." No action was taken upon this suggestion. In March, 1859, he sent in other drawings in which this tower, or shield, was placed upon a turn-table, thus rendering it a revolving turret. In 1860 appeared in "Blackwood's Magazine" an article on this subject, with a drawing of such a turret, with the mechanism for turning it by hand. But the invention had been previously set forth by John Ericsson in a memorial to Napoleon III. (1854), and still earlier by Theodore R. Timby, an American inventor, who made a small model of a revolving turret in 1838, filed a caveat in the patent office in 1841, and publicly exhibited a large model in 1843. (See IRON-CLAD SHIPS.) After the success of the experiment of the Monitor in 1862, however, Coles put forth a statement in which he says: "My plans were so exactly similar to that of the Monitor, that I think it will be apparent that this invention is of English origin, and I claim it." In 1864 the British government had a man-of-war, the Royal Sovereign, altered into a "shield" ship under the direction of Capt. Coles, and subsequently constructed several other turreted vessels. One of these was the Captain, an iron vessel, which foundered off Cape Finisterre, and of 540 persons on board only 17 were saved. Among those lost was Capt. Coles, who was a passenger.

COLET, John, an English clergyman, born in London in 1466, died there, Sept. 16, 1519. He completed his education at Oxford, and afterward visited France and Italy. On returning to England he was ordained, delivered at Oxford free lectures on the epistles of St. Paul, and was successively appointed rector of Dennington in Suffolk, prebendary of York, canon of St. Martin's-le-Grand, London, and dean of St. Paul's. He was one of the first of the Anglican clergy who introduced the custom of expounding the Scriptures on Sundays. This innovation caused Dr. Fitzjames to denounce him as a heretic, but the archbishop dismissed the complaint. In 1508 the dean conceived the idea of founding and endowing a school in which the children of the poor should receive a free education. This institution was completed in 1512, and, from its connection with the cathedral, was denominated the St. Paul's school. He wrote various philological and devotional works, the most important of which are his "Accidence," "Syntax," "Daily Devotions," and "Monitions to a Godly Life."

COLET, Louise, a French poetess, born at Aix, Sept, 15, 1810, died in Nice in 1876. Her maiden name was Révoil, and she married in 1835 Hippolyte Colet of Nîmes, a musical composer. Soon after her marriage she accompanied her husband to Paris, where he became professor in the conservatory. In 1837 she published a volume of poems, *Fleurs du midi*, which was criticised by Alphonse Karr with so much severity in *Les Guêpes* that the author attempted to stab him with a knife, and was subjected to some ridicule in consequence. She did not, however, abandon literature, but published various novels in the

Revue de Paris, one of which, *Silvio Pellico*, attracted much attention. She obtained the prize for poetry from the French institute in 1839 (also in 1843, 1852, and 1854), and was granted a pension by the government. In 1842 she became one of the circle frequenting the salon of Mme. Récamier, upon whose death her own salon became a resort of the literati of Paris. Her husband died in 1851, and she went to England, whence she returned in the following year. In 1859 she went to Italy, where she wrote *Madeleine*. George Sand having published a representation of her relations with Alfred de Musset in a book entitled *Elle et lui*, Paul de Musset, his brother, answered it with *Lui et elle*. To this Mme. Colet while in Italy wrote a reply in a romance entitled *Lui*, of which several editions were published. In 1864 she went again to Italy, where a strong prejudice was excited against her on account of the supposed irreligious tendencies of her writings, and her house at Ischia was surrounded by a mob who threatened her life. Among her volumes of poetry are *Le marabout de Sidi Brahim*, *Réveil de la Pologne*, and *Le poëme de la femme;* and among her romances and prose works are *La jeunesse de Mirabeau*, *Histoire d'un soldat*, *Folles et saintes*, *Deux femmes célèbres* (1846, republished in 1854 under the title of *Mme. Duchâtelet*), *Deux mois dans les Pyrénées*, and *L'Italie des Italiens* (4 vols., 1862–'4). She also published dramas entitled *La jeunesse de Gœthe*, *Charlotte Corday*, and *Madame Roland*, and various translations. Among her latest works are *Les derniers marquis*, *Courtisanes de Capri*, *Journée d'une femme du monde*, *Satires du siècle*, and *Les derniers abbés* (1869).

COLFAX. **I.** A N. E. county of Mississippi, formed since the census of 1870, bounded E. by the Tombigbee river, and S. partly by the Oktibbeha, which with its branches intersects the W. portion; area, about 400 sq. m. The surface is level; the soil fertile and well adapted to cotton. The Mobile and Ohio railroad passes through the county seat. Capital, West Point. **II.** An E. county of Nebraska, bounded S. by the Platte river, and watered by Shell and Maple creeks; area, about 500 sq. m.; pop. in 1870, 1,424. The Union Pacific railroad passes through it, and the Elkhorn Valley road will cross the N. E. corner. The chief productions in 1870 were 13,529 bushels of wheat, 27,164 of Indian corn, 15,017 of oats, 8,354 of potatoes, and 2,203 tons of hay. There were 231 horses, 351 milch cows, 423 other cattle, and 295 swine. Capital, Schuyler. **III.** A N. E. county of New Mexico, formed in 1869 from Mora co., bounded N. by Colorado and W. by the Rio Grande; pop. in 1870, 1,992. In the western portion gold has been found, and in 1871 there were two quartz mills. The chief productions in 1870 were 5,491 bushels of wheat, 11,000 of Indian corn, 14,398 of oats, 836 tons of hay, and 13,500 lbs. of wool. There were 56 horses, 355 milch cows, 1,726 other cattle, 9,300 sheep, and 427 swine. Capital, Elizabethtown.

COLFAX, Schuyler, 17th vice president of the United States, born in New York city, March 23, 1823. His grandfather, Capt. Colfax, was an officer of the revolutionary army and the commandant of Washington's body guard. His father died before Schuyler was born, and when he was ten years old his mother married again, and for the next three years he was employed in his stepfather's store. In 1836 the family emigrated to Indiana, and settled in New Carlisle, St. Joseph co. During the five following years Schuyler was a clerk in a country store. In 1841 his stepfather, Mr. Matthews, was elected county auditor and removed to South Bend. Schuyler was appointed his deputy and began to study law; but after serving for two years as senate reporter for the Indianapolis "State Journal," he established in 1845 a weekly paper at South Bend called the "St. Joseph Valley Register," of which he was both proprietor and editor. In politics it supported the whig party, and in 1848 Mr. Colfax was sent as a delegate to the whig national convention at Philadelphia, of which body he was elected secretary. In 1850 he was a member of the Indiana state constitutional convention, in which he spoke and voted against the clause prohibiting free colored persons from entering the state. In 1851 he was a candidate for congress, and was defeated by a majority of only 216, though his district was strongly democratic. In 1852 he was a delegate to the whig national convention at Baltimore, which appointed him its secretary. Two years later he was elected a representative in congress by the newly formed republican party, and was reëlected for the six following terms. In 1856 he supported Mr. Fremont for president, and during the canvass a speech made by him in congress, on the extension of slavery and the aggressions of the slave power, was circulated to the extent of more than half a million copies. In the 35th congress Mr. Colfax was made chairman of the committee on post offices and post roads, which place he continued to occupy until his election, Dec. 7, 1863, as speaker of the 38th congress. He was reëlected speaker in 1865, and again in 1867. In 1865 he made a journey across the continent to the Pacific coast; and in May, 1868, the republican national convention at Chicago nominated him for vice president of the United States, with Gen. Grant as candidate for president. He received 522 votes of the 650 that were polled by the convention, and was elected in November; and on March 4, 1869, he was inaugurated vice president, and took his seat as president of the senate. In 1870 he wrote a letter, which was published, declaring his purpose to withdraw from public life at the close of his term as vice president. He was subsequently led to change this determination, and in the republican na-

tional convention at Philadelphia in 1872 he was a candidate for the nomination as vice president, and received 314½ votes, 384½ being given to Henry Wilson of Massachusetts, who was accordingly nominated on the first ballot and chosen in the subsequent presidential election. In 1873 Mr. Colfax was implicated in the charges of corruption brought against members of congress who had received shares of the crédit mobilier of America, and was repeatedly examined before the congressional committee appointed to investigate the matter. A resolution directing the judiciary committee of the house of representatives to inquire if the evidence taken by the committee called for the impeachment of any officer of the government, brought forth a report, on Feb. 24, 1873, declaring that there was no ground for the impeachment of Mr. Colfax, inasmuch as the alleged offence of bribe-taking, if committed at all, had been committed before he became vice president. This report was accepted, and nothing more done with the matter.

COLIC, in its strictest sense, a severe and moving pain in the colon, or large intestine; but pains having their seat in the small intestines, and in any of the abdominal viscera, are now included under this term. Bilious colic is attributed to excessive secretion or acridity of the bile; flatulent colic to the accumulation of intestinal gases; painters' colic to the poisonous and paralyzing influences of lead; hepatic colic to the passage of gall-stones along the biliary ducts. Besides these there are menstrual colic, preceding or accompanying the menstrual discharge; nephritic colic, in inflammation of the kidney, or during the passage of calculi along the ureters; verminous colic, due to the irritation of worms in the intestines; uterine colic, having its seat in the uterus; nervous colic, arising from a spasmodic contraction of any part of the alimentary canal, from the stomach to the colon; so that colic, or shifting abdominal pains, is a symptom of a great variety of diseased conditions, both functional and organic. The disease generally understood by colic has its seat in the small intestines, which seem to be variously rolled and twisted, accompanied by very severe pain and constipation. The treatment is as various as the causes, consisting of opiates to relieve pain, antispasmodics to arrest irregular nervous action, stimulating cathartics and enemata, hot external applications to the abdomen, carminatives to remove flatulence, the inhalation of ether during the passage of biliary and renal calculi, and antiphlogistic and demulcent remedies when accompanied by any inflammatory symptoms. Children are particularly subject to colic, but are easily relieved by familiar domestic remedies. Lead colic will require further mention in its proper place; copper colic resembles it, except that it is generally accompanied by diarrhœa, instead of the obstinate constipation which is so characteristic of the disease produced by lead.

COLIGNI, or **Coligny, Gaspard de,** leader of the French Huguenots, and principal victim of the St. Bartholomew massacre, born at Châtillon-sur-Loing, Feb. 16, 1517, murdered in Paris, Aug. 24, 1572. He was introduced in 1539 to Francis I. by his uncle, the great constable Anne de Montmorency, and was knighted for his services in the battle of Ceresole, and appointed to the command of an infantry regiment. He soon acquired the reputation of being one of the best officers in the army. His stern sense of duty and indomitable bravery contrasted in a striking manner with the gay and frivolous disposition of the young nobles of his time. On the accession of Henry II. he was promoted to the rank of colonel general of the French infantry. Owing to his skilful efforts the strictest discipline soon prevailed among soldiers who had heretofore been notorious for insubordination. The rules he established became the basis of the French military code, and he may be regarded as one of the founders of the French system of infantry. Soon afterward he received the commission of admiral, which office, being more of a military than naval character, placed him in power next to the constable. His colonel-generalcy he resigned to his brother Dandelot. He accompanied Henry II. in his conquest of the "three bishoprics," Metz, Toul, and Verdun, and subsequently contributed to the victory won at Renty by the French over the army of Charles V. Appointed governor of Picardy, he displayed remarkable intrepidity in conducting the defence of St. Quentin against the Spanish troops. Although all hopes of holding the town were gone, Coligni refused to surrender, and was taken prisoner (1557) while fighting desperately at the head of a few soldiers, and sent to the castle of Sluis, where he was confined for several months, but finally recovered his liberty on paying a ransom of 50,000 crowns. With the genius of a warrior he combined the fervor of a religious reformer. He was a devoted Calvinist, having for years meditated upon the opinions promulgated by the great French reformer; and although not yet openly avowing the new creed, he had proved an active supporter of the French Protestants. He now proposed to secure for them a place of refuge, and sent several expeditions to America, one of which, intrusted in 1562 to Jean Ribault of Dieppe, erected Fort Charles on the coast of Carolina, but soon abandoned it and returned to France; another in 1564, placed under the command of Laudonnière, settled near the mouth of St. John's river, Florida, but they were expelled and nearly exterminated by the Spaniards, who claimed the ownership of the country. After the death of Henry II. (1559), Coligni came boldly forward as the leader of the Huguenots, and his attempts to secure religious liberty for his followers having been defeated by the intrigues of the duke of Guise and of Catharine de' Medici, he reluctantly took up arms in 1562.

At the battle of Dreux, fought in that year, the prince of Condé was taken prisoner; and after this prince's death at the battle of Jarnac (1569), Coligni gathered the remains of the Protestant army, and was soon able to confront again the Catholics at Moncontour. In this last encounter he was defeated; but although severely wounded, and unable to ride on horseback, he led the retreat from his litter, preserving such good order and presenting such an unbroken front to the enemy that the Catholics themselves became favorable to a termination of the war, and peace was actually made a few months afterward. It has been very justly said of Coligni that he was never more to be dreaded than after a defeat, and he has been called the "general of retreats." After the treaty of St. Germain in August, 1570, Coligni reappeared at the court, where he submitted to Charles IX. plans for the improvement of his government and the direction of his foreign policy. Charles seemed to receive his advice with great deference, but he was surrounded by courtiers who would not tolerate the influence of a Huguenot, and the great admiral was destined to be the first victim of the massacre of St. Bartholomew. Two days previous to the consummation of this tragedy, Coligni had been shot at from a house belonging to the Guise family by a man named De Maurevel, a creature of the queen. Charles IX. called on the wounded warrior, seemed to sympathize with his misfortune, and swore that the murderer should not escape punishment; but his mother persuaded him that the Huguenots were about to attempt a massacre of the Catholics, and that they must be anticipated. The admiral was abandoned to the same fate which overcame all the other Huguenots. A band of murderers, led by Behme, a German in the service of the duke of Guise, invaded the admiral's house. On entering his room, they were at first subdued by the prestige of his presence; but Behme, soon recovering his presence of mind, stabbed him in the stomach with a boar spear and threw the body into the court, where the duke himself was in waiting. This young prince had always, but unjustly, accused Coligni of having been an accomplice in his father's murder, and could only be satisfied by his death. The head of the unfortunate hero was brought to Catharine, who had it embalmed and sent to Rome. His lacerated remains were dragged through the streets, and at last placed on the gallows at Montfaucon, where it is said Charles IX. went to look at them, accompanied by his courtiers. Some faithful servants of Coligni carried them away during the night, at the peril of their lives, and his cousin Montmorency had them secretly buried in Chantilly. In 1786 Montesquieu transferred them to his estate of Maupertuis, where he dedicated a chapel and a monument in honor of the admiral. After the revolution, the latter was removed to the *musée des monuments français*. Coligni left memoirs of his own time, but they were destroyed. The only work of his which has been preserved is his *Relation du siége de St. Quentin*. An essay entitled *Souvenirs historiques sur l'amiral Coligni, sa famille et sa seigneurie de Châtillon-sur-Loing*, was prepared in 1858 by M. Becquerel, a member of the French academy, and read before that body.

COLIMA. **I.** A state of Mexico, between lat. 18° and 19° 30′ N., and lon. 102° 40′ and 104° 20′ W., bounded N. by Jalisco, E. and S. E. by Michoacan, and S. W. by the Pacific; area,



Colima.

2,393 sq. m.; pop. in 1869, 48,649. It has a coast line of about 100 m. Its surface is generally level, no part of it, excepting a few mountain peaks, rising more than 1,000 ft. above the sea. The climate is very hot, and the soil produces largely. Coffee, tobacco, cotton, cacao, indigo, vanilla, various fruits, and the mulberry grow to perfection. The inhabitants are chiefly Indians.—The volcano of Colima, which is in the state of Jalisco, is 12,000 ft. high, and forms the S.W. extremity of the chain which traverses Mexico from E. to W. For 40 years it had been inactive, and was supposed to be extinct; but on July 12, 1869, it began to smoke, and a few weeks later to pour forth a stream of pumice stone intensely heated, which spread for miles and covered hundreds of acres. It was still in eruption in 1873.

II. The capital and principal city of the state, situated in a fertile plain watered by several rivers, two of which pass the town, in lat. 19° N., lon. 103° 7′ W., 270 m. W. by S. of Mexico; pop. about 20,000. It is a well built city, with regular streets, mostly paved. There are two squares, the principal of which is the Plaza de Armas. It has a government house, a number of churches, a college, and several schools. There is a considerable demand for manufactured goods, cottons, linens, woollens, and hardware. Its port, Manzanilla, 60 m. S. by W. of the city, has fine anchorage and a good commerce with San Francisco. There are no buildings there, it being only a landing place. Colima was founded by Gonzalo de Sandoval in 1522, incorporated under the name of Santiago de los Caballeros by Philip II., and made a city in 1824.

COLLAMER, Jacob, an American senator, born at Troy, N. Y., in 1792, died at Woodstock, Vt., Nov. 9, 1865. He was a son of Samuel Collamer, who was a native of Scituate, Mass., and a soldier of the revolution. In childhood the family removed to Burlington, Vt., and Jacob graduated at the university of Vermont in 1810. He studied law at St. Albans, and was admitted to the bar in 1812, after which he made the frontier campaign as a lieutenant of artillery in the detached militia in the United States service. He accomplished his course of preparatory, collegiate, and professional studies without any other pecuniary means than such as his own industry supplied. Until 1833 he practised law in Washington, Orange, and Windsor counties, commencing at Barre. In 1821, '22, '27, and '28 he represented the town of Royalton in the general assembly. In 1833 he was elected an associate justice of the supreme court of Vermont, and was continued on the bench till 1841, when he declined a reelection. In 1842 he was chosen a member of congress, and was reëlected in 1844 and 1846, but in 1848 declined to be again a candidate. In October, 1848, the whig party of Vermont formally recommended him through a legislative caucus for a cabinet appointment, and on March 7, 1849, he was appointed postmaster general by President Taylor, in which office he continued till July 20, 1850. On Nov. 8, 1850, he was elected judge of the supreme court, and was annually reëlected until Oct. 14, 1854, when he was elected United States senator. He continued in that office until his death, and served as chairman of the committee on post offices and post roads and on that of the library. The degree of LL. D. was conferred upon him by the university of Vermont and by Dartmouth college.

COLLÉ, Charles, a French dramatist and song writer, born in Paris in 1709, died Nov. 3, 1783. He was appointed by the duke of Orleans, the son of the regent, his reader and private secretary, and during 20 years wrote plays for the private theatre of the duke. He also wrote songs, which have more merit than his plays, and were in the same vein with those of his imitators, Desaugiers and Béranger. The plays have been published under the title of *Théâtre de société*, and the songs in two volumes.

COLLE, Raffaellino dal, an Italian painter of the earlier part of the 16th century, studied under Raphael and afterward under Giulio Romano, and was the assistant of both these artists. His manner of painting resembled that of Raphael. He worked for a time under the direction of Vasari. Among his paintings are a picture of the "Resurrection," in the church of St. Rocco at San Sepolcro; an "Assumption," in the church of the Conventuali at Città di Castello; a "Nativity;" and two pictures representing scenes in the life of St. Benedict, painted in fresco, in the chapel of the Olivet monks at Gubbio. Raffaellino is considered one of the best masters of the school of Raphael.

COLLEGE (Lat. *collegium*, an association), in its primary and most general meaning, the union of several persons (*collegæ*, colleagues), with like powers, privileges, and customs, in one office for a common end. Thus, in Roman antiquity, colleges consisted of at least three persons, forming a corporation for religious, political, or industrial purposes. The four principal colleges of priests were the *collegium pontificum*, *C. augurum*, *C. septemvirorum* or *epulonum*, and *C. quindecimvirorum*. These were instituted by the earliest kings, and besides them there were many designed for the service of inferior divinities, or at a later period for the worship of the emperors after their apotheosis. Of the last class the *C. Augustalium* and *C. Flavialium* were examples. Among the Roman political colleges were the *C. Capitolinorum*, which presided over the Capitoline games, the *C. tribunorum plebis*, which protected the plebeians from the abuse of patrician magistrates, and the *C. quæstorum*, which managed the public revenues. There were also from the time of Numa or Servius Tullius colleges of artificers, carpenters, butchers, bakers, locksmiths, potters, and finally of persons engaged in nearly every other branch of industry. Their original design was either to bring the old and new citizens into closer union, or, according to Plutarch, to prevent the danger of any general conspiracy, by organizing separate assemblies, festivals, and finances for different portions of the citizens. During the latter period of the republic these colleges increased in number, and became intriguing and violent parties in the comitia, so that the senate ordered the dissolution of all those newly formed. They were revived during the civil wars, and suppressed by Cæsar and again by Augustus, being regarded as centres of conspiracy. In the Byzantine empire they were encouraged and patronized, in return for which they furnished to the government the products needed for the public services.—Among more recent applications of the term are the *collegium tenuiorum*, a mediæval union of poor men who engaged to procure for each

other proper burial; the sacred college, or college of cardinals, which assembles in conclave and elects the pope; the colleges or courts of admiralty, having maritime jurisdiction at Amsterdam, Rotterdam, Hoorn, and other seaports of Holland; the colleges of the Arminians, or their assemblies held twice each week on Sunday and Friday; the three colleges of electors or their deputies, of princes or their deputies, and of the deputies of imperial cities, which composed the Germanic diet prior to the dissolution of the German empire in 1806; the college of electors of president and vice president in the United States, chosen by the people once in four years for that purpose only; the college of justice, or supreme civil court, of Scotland, embracing the advocates and clerks as well as the lords of council and session; the college of heralds in England, incorporated by charter of Richard III. with various privileges, and subordinate to the earl marshal of England, who held his court of chivalry in its hall assisted by its members; the college of general superintendence in Russia, or that department of government which has direction of all benevolent institutions, schools, and houses for the sick and poor; the London college of civilians, or doctors' commons, founded by Dr. Harvey, the members of which live in a collegiate manner, and in whose common hall the principal spiritual court and the high court of admiralty are held; the London college of physicians, chartered by Henry VIII., and endowed by that monarch and his successors with various privileges, such as the power to inspect the apothecaries' shops and superintend the drugs sold in and about London, and without a license from which no person, though he may have received a medical degree from a university, is permitted to practise medicine within seven miles of that city; the Edinburgh college of physicians, instituted in 1681, to make laws for promoting the art and regulating the practice of physic, having similar powers to those of the corresponding college at London, but obliged to admit the professors of physic in the universities of Scotland as honorary members, and to license all those who have received medical degrees from the universities; and several other European colleges of surgery, medicine, or health, which have both a power of police over matters pertaining to the public health and the privilege of instructing and examining candidates for medical degrees. The oldest of these in Germany was established by Frederick William, elector of Brandenburg, in Berlin, in 1685. This was followed by a similar college of health in each of the Prussian provinces, and in 1725 there were twelve *Provinzial-Collegia medica* under the general supervision of the Berlin *Ober-Collegium medicum*. By the constitution of 1808 the provincial colleges gave way to medical committees, which were organized in 1815 and 1817 as sections of the administrative government. The London college of surgeons, which dates from the reign of Edward IV., is composed of persons empowered to practise the art of surgery in Great Britain, and has 24 councillors and over 500 fellows, with extended rights and privileges. A competent education and at least eight years of surgical practice are requisite before an examination for a fellowship. The Edinburgh college of surgeons has a corporate character as a royal college. It consists of the surgeons of Edinburgh, has the privilege of examining and of licensing or rejecting all practitioners in surgery in the neighboring counties, and its diplomas are recognized by the army and navy medical boards, and by the East India company, as qualifications for their surgeons.—Colleges as departments of a university arose about the beginning of the 13th century. When the repute of the great scholastic teachers had attracted thousands of students to the university towns, collisions became frequent between the citizens and so many for the most part rich and noble youths. In order to secure to the students a more fixed mode of life, so that their manners and morals should be under stricter supervision, hotels or boarding houses were established, in which the scholars lodged together under the direction of a superior. These hotels, which were termed colleges, were gradually endowed by the gifts of charitable persons, till they were able to furnish free lodgings and finally entire support to a certain number of poor scholars. The name college was soon applied to any institution for academic purposes, endowed with revenues, and possessing a private code of laws, whether it were wholly independent or subject to the general government of a university. Collegiate foundations do not appear to have existed in the Saracen schools of Spain, but were first established in Paris, and soon afterward in Oxford and Cambridge, in Bologna and Padua, and in Prague and Vienna. In the 15th century the endowments of popes, kings, dignitaries of the church, and powerful families had made colleges so common in many of the European universities, that every person connected with a university was usually a member of some one of its colleges. Some of them were in the interest of the monastic orders, and their design to train ministers for the church still appears in the prohibition of the fellows of the English colleges from marrying. They were sometimes not only schools for the young, but hospitals for the old. Sion college in London was in the 14th and 15th centuries both a priory and a hospital. It is now a corporation of the clergy of the city of London, and also a hospital for 20 poor men and women. St. Peter's college, Westminster, may also be mentioned, as well as the royal naval college at Portsmouth. Among the oldest French colleges are the Sorbonne, founded about 1250, in which at first 16 students of theology were gratuitously supplied; the collége de Bons Enfants, founded in 1257; d'Harcourt, in 1280; and de Navarre,

in 1304. Though they were charitable institutions, some of them became so renowned for the learning and eloquence of their lecturers that nobles and princes of the blood placed their children in them. In the university of Paris, 15 colleges were founded in the 13th century, and the number has since been increased to about 100, more than half of which are of slight importance. Each college became a distinct faculty, having lectures and disputations only in a single department, and the university was a collection of colleges, each of which gave instruction exclusively in one branch of learning. The colleges in the English universities assumed at first a different character, being not designed to confer instruction, but to administer royal or private munificence in aiding students through the university. The task of instruction was, however, gradually transferred from the university to the colleges, till at present the former retains only such general powers as the conferring of degrees or other honors. Each college, instead of limiting its instructions to one department, assumes the entire task of qualifying its members for degrees. The funds support a certain number of graduates termed fellows, who may retain this position for life, unless they inherit estates of greater income, or marry; and there are scholarships, exhibitions, and other stipends which give entire or partial support to a portion of the undergraduates, all of whom are under the superintendence of tutors. Besides those who receive aid from the foundations, there are other independent students, who are styled, according to their rank and expenditures, noblemen, fellow commoners, or commoners. Oxford has 20 colleges and 5 halls, the latter being merely unendowed boarding places, where each student lives at his own expense. Cambridge has 17 colleges. Gresham college was established in 1575 by Sir Thomas Gresham, founder of the royal exchange. The lectures commenced, after his death, in his own house near Broad street, in June, 1597; and there, too, the founders of the royal society met in 1645. After the destruction of this building in 1768, the lectures were continued in a room over the royal exchange. On Nov. 2, 1843, the present edifice in Basinghall street was opened.—It is only within the last 50 years that collegiate establishments belonging to Roman Catholics and dissenters have enjoyed the privilege of obtaining academic degrees for their pupils, without having to subscribe to the thirty-nine articles. An attempt to remedy this injustice, and to provide a complete university and scientific education for the inhabitants of the metropolis, led to the founding of University college, King's college, and the university of London. The project originated with the poet Campbell and Lord Brougham. The latter in 1825 introduced a bill into parliament for incorporating the university of London, which was lost. The next step was to found and organize the institution at first named London university. The deed of settlement was dated Feb. 11, 1826; the building in Gower street was commenced April 30, 1827, the first stone being laid by the duke of Sussex; and it was opened by an inaugural lecture from Prof. Bell, Oct. 1, 1828. As the course of instruction was free to persons of every creed, and did not embrace positive religious teaching, a warm and persistent opposition was at once set on foot by members of the church of England, supported by Oxford and Cambridge, and even by royalty itself. George IV. gave toward the foundation of a rival establishment the ground on which stood the east wing of Somerset house. The new college, named after him King's college, was incorporated by royal charter Aug. 14, 1829, and opened Oct. 8, 1831. Every effort made to obtain a charter for London university proved ineffectual until Nov. 28, 1836, when two charters were granted by William IV., one to London university, the name of which was now changed to University college, and the other establishing the university of London. This latter obtained a new charter in 1837, empowering it to confer degrees on the pupils of King's college, as well as those of University college and all other like proprietary collegiate institutions in England. These powers have again and again been enlarged, and the university of London is now (1873) represented in parliament by Robert Lowe, chancellor of the exchequer. Among the many colleges which at the present time are connected with it in the British islands and colonies, the following may be mentioned: Manchester Independent college, founded for educating persons of the Independent persuasion; the Owens college at Manchester, from which theological instruction is excluded; Manchester New college, belonging to the Unitarians; the Catholic colleges of Stoneyhurst, Lancashire (known as a first-rate scientific as well as classical school), and St. Cuthbert's, Ushaw, Durham county, the rival of Stoneyhurst, and in which the historian Lingard counted among his pupils the late Cardinal Wiseman and the late Rev. John Larkin.—Colleges in France are now a grade of public schools, corresponding nearly to the gymnasia of Germany, and educating pupils between about the ages of 10 and 18. They are either state or communal, according as they are sustained by the funds of the state or of particular cities. There are 83 of the former class (termed lyceums since 1850), including 5 in Paris, under the direction of an inspector appointed by the academy; and 253 of the latter, superintended by the minister of public instruction. The course of study embraces religion, the French, Latin, and Greek languages, one or two foreign modern languages, philosophy, history, geography, mathematics, the natural sciences, and drawing. The college of France, founded by Francis I. in 1530, presents a system of instruction hardly surpassed in vastness by any uni-

versity. Its origin was due to the impulse given to learning in the West by the labors of exiled Greeks from Constantinople, and to the solicitations of Guillaume Budé, a disciple of Johannes Lascaris. Its professors have always borne the name of *lecteurs royaux*. At first having chairs of but three ancient languages, it has now 28 professors and distinct courses, embracing astronomy, mathematics, mathematical physics, experimental physics, medicine, comparative embryology, chemistry, natural history of organic and of inorganic bodies, the law of nature and of nations, comparative legislation, political economy, the ethics of history, archæology, the Hebrew, Chaldaic, Syriac, Arabic, Persian, and Turkish languages, the Chinese, Mantchoo Tartar, Sanskrit, and Greek languages and literatures, Latin poetry and eloquence, Greek and Latin philosophy, the mediæval and the modern French languages and literature, the foreign modern European languages and literatures, and the Slavic languages and literatures. All these courses are gratuitous. Among the distinguished men who have taught in this college are Gassendi, Tournefort, Lalande, Delambre, Cuvier, Ampère, Thénard, Batteux, Rollin, De Guignes, Delille, Andrieux, Sylvestre de Sacy, and Abel Rémusat. This college and the *jardin des plantes* are almost the only establishments of public instruction in France which survived the tumults of the first revolution. Besides the colleges under the direct control of the university, there are in France a large number of proprietary colleges, denominated *colléges libres* according to the law of 1850. The great majority were founded by the clergy; but not a few are under exclusive lay government. Among the latter class are the colléges Ste. Barbe, Stanislas, Rollin, and Juilly; among the former we may mention the collége Ste. Geneviève, belonging to the Jesuits, and the collége de Vaugirard, both of high excellence in scientific and classical education, as well as the collége des Carmes, which under the late Bishop Cruice had the reputation of one of the best scientific schools in Paris.—In Rome many colleges have been founded for the purpose of training able missionaries for the various nations of the globe. The college of the Propaganda was founded in 1627 by Urban VIII., for the education of young men of every color and nationality. The *collegio Romano* was built in 1582 by Gregory XIII., and has ever been exclusively under the management of the Jesuits; besides the splendid library and the Kircherian museum, the Roman observatory is also attached to this college, and under the direction of Fathers de Vico and Secchi has rendered important services to modern science. There are moreover the *collegium Germanicum*, the English, Irish, and Scotch colleges, and two founded by Pius IX., the *collegium Americanum* for natives of the United States, and the *collegium Hispano-Americanum* for natives of Spanish America.—When a separate college contains within itself all the faculties and privileges of a university, it is often designated by the latter name, and therefore the terms college and university are in many cases used indiscriminately. Thus, Trinity college in Dublin is also called a university, and there is no fixed distinction between colleges and universities in the usage of the United States. All American colleges confer degrees in the arts, and the older and more flourishing of them have faculties and give instruction also either in medicine, divinity, or law, or in a few instances in all the professional studies. (Particular accounts of colleges are given under their names in special articles. See also UNIVERSITY.)—The following table, arranged in the alphabetical order of the states, presents a general view of the universities, colleges, and collegiate departments in the United States in 1872, as reported by the United States bureau of education, omitting however many institutions of little importance. The list reported by that department comprises 298 institutions, and the names of 52 others were given from which no information had been received. Many of these institutions, though classified as colleges, are doubtless such only in name, being in fact merely ordinary high schools; but owing to the great difficulties of classification, the results here given possess as high a degree of accuracy as can practically be attained. Many of the colleges in the list have professional schools connected with them which are not included in the results given. Business colleges and institutions for the superior instruction of females, as well as technical and professional schools, are also excluded. For each institution having a preparatory school, the statistics for that department and for the collegiate department proper are presented separately. Of the 298 institutions reported, 217 report collegiate students in attendance. The total number of instructors in all the institutions was 3,040, and of students 45,628, including 19,476 in the preparatory courses, 19,260 in collegiate courses, 6,694 unclassified, and 198 resident or post-graduate students. Among the students were 5,680 females, of whom 4,261 were in the preparatory and 1,419 in the collegiate department. The course of study in 209 of these institutions is reported to be four years, in 9 three years, in 7 two years, and in 25 more than four years, including evidently the preparatory and collegiate courses; while 48 make no report of the number of years in the course. At the last commencement the degree of A. B. was conferred in course upon 1,963 persons, the degree of A. M. in course upon 746, and various honorary degrees were conferred upon 341. There were, however, 124 institutions that made no report of the degrees conferred in course. In Arkansas, Delaware, Florida, Louisiana, Minnesota, Nebraska, Nevada, Oregon, Texas, Colorado, New Mexico, Utah, and Washington territory, no institutions are reported to have conferred the degree of A. B.

TABLE OF COLLEGES IN THE UNITED STATES.

NAME.	Location.	Date of organization.	Denomination.	Professors and instructors.						Number of students unclassified.	Prepar'y Depart.		No. of students collegiate dep't.	Volumes in library.
				Whole number of faculty.	Resident professors.	Non-resident professors.	Instructors.	Tutors.	Endowed professorships.		Number of instructors.	Students.		
Southern University	Greensborough, Ala	....	Methodist Episcopal	13	..	..	..	..	..	120	..	....	....	10,000
Howard College	Marion, Ala.	1837	Baptist	10	10	..	..	..	0	....	1	40	95	1,200
St. Joseph's College	Spring Hill, Ala.	1829	Roman Catholic	16	16	0	9	0	0	....	..	..	150	5,000
University of Alabama	Tuscaloosa, Ala.	1831	None	11	11	0	0	0	11	....	0	0	112	2,000
St. John's College	Little Rock, Ark.	1857	Masonic	4	3	1	..	2	..	....	2	102	....	.....
Missionary College of St. Augustine	Benicia, Cal.	1868	Protestant Episcopal	5	4	1	8	2	0	....	4	65	29	.....
St. Vincent's College	Los Angeles, Cal.	1867	Roman Catholic	4	4	..	4	..	..	....	4	45	....	1,000
University of California	Oakland, Cal.	1855	State	18	..	..	..	..	..	59	..	149	147	3,000
St. Ignatius College	San Francisco, Cal.	1855	Roman Catholic	19	11	8	..	..	..	....	6	300	150	5,200
St. Mary's College	" "	1863	" "	12	8	4	10	..	..	....	10	200	18	1,400
University College	" "	1859	Presbyterian	23	23	..	3	2	..	....	3	90	90	.....
Franciscan College	Santa Barbara, Cal.	1868	Roman Catholic	9	6	0	6	2	..	....	3	40	....	2,000
Santa Clara College	Santa Clara, Cal.	1851	" "	15	6	4	8	8	0	....	3	80	....	10,000
University of the Pacific	San José, Cal.	1852	Methodist Episcopal	5	5	..	7	2	..	....	..	..	....	.....
Pacific Methodist College	Santa Rosa, Cal.	1861	Meth. Epis. South	9	6	0	..	0	..	....	3	110	50	500
California College	Vacaville, Cal.	1870	Baptist	4	..	..	..	..	..	68	..	..	....	1,000
Trinity College	Hartford, Conn.	1823	Protestant Episcopal	17	8	9	..	..	4	....	..	..	88	15,000
Wesleyan University	Middletown, Conn.	1831	Methodist	13	7	2	2	..	7	....	..	..	190	22,000
Yale College	New Haven, Conn.	1700	Congregational	57	52	16	5	16	4	....	..	..	517	86,000
Delaware College	Newark, Del.	1870	State	5	5	2	2	1	..	....	10	93	12	6,000
University of Georgia	Athens, Ga.	1801	State	12	..	..	..	..	..	7	..	55	255	20,000
Mercer University	Macon, Ga.	1838	Baptist	5	..	..	..	..	..	....	..	..	82	5,000
Emory College	Oxford, Ga.	1838	Meth. Epis. South	6	6	..	6	..	..	....	1	50	189	3,000
Abingdon College	Abingdon, Ill.	1855	Disciples	8	..	0	9	1	0	....	..	..	76	.....
Illinois Wesleyan University	Bloomington, Ill.	1857	Methodist Episcopal	10	10	0	10	0	3	....	5	175	102	1,500
St. Viateur's College	Bourbonnais Grove, Ill.	1866	Roman Catholic	13	13	..	..	..	..	....	..	..	150	.....
Blackburn University	Carlinville, Ill.	1867	Presbyterian	7	7	..	7	..	5	....	5	196	79	1,000
Chicago University	Chicago, Ill.	1859	Baptist	13	..	..	3	2	..	52	..	154	75	.....
St. Ignatius College	" "	1870	Roman Catholic	10	10	0	6	2	0	....	2	23	44	5,000
Eureka College	Eureka, Ill.	1852	Disciples	7	..	..	..	..	..	128	..	..	216	.....
Northwestern University	Evanston, Ill.	1854	Methodist	11	8	0	3	0	1	....	8	306	146	22,000
Freeport College	Freeport, Ill.	1872	Presbyterian	5	5	..	5	..	..	....	5	60	....	.....
Lombard University	Galesburg, Ill.	1857	Universalist	5	4	1	8	..	..	....	6	101	....	.....
Knox College	" "	1841	Congregational	15	..	..	..	..	..	....	..	127	61	6,200
Illinois College	Jacksonville, Ill.	1830	"	13	6	2	3	2	4	....	4	234	25	8,000
McKendree College	Lebanon, Ill.	1828	Methodist Episcopal	6	6	0	6	0	0	....	3	126	139	8,000
Lincoln University	Lincoln, Ill.	1866	Cumb'd Presbyterian	7	4	1	6	1	5	....	4	87	44	2,000
Monmouth College	Monmouth, Ill.	1856	United Presbyterian	9	..	3	..	..	..	....	7	140	121	2,000
Northwestern College	Naperville, Ill.	1861	Evangelical Associat'n	8	5	1	7	1	..	....	5	128	22	600
Shurtleff College	Upper Alton, Ill.	1835	Baptist	12	12	0	..	..	6	....	3	103	46	4,250
Westfield College	Westfield, Ill.	1867	Unit'd Breth. in Christ	5	5	0	7	..	0	....	..	174	41	300
Wheaton College	Wheaton, Ill.	1855	Congregational	10	8	2	15	2	3	....	..	22	44	3,000
Indiana University	Bloomington, Ind.	1828	None	24	24	0	..	1	..	....	..	0	211	6,000
Wabash College	Crawfordsville, Ind	1834	Presbyterian	8	8	..	8	..	..	....	5	142	89	12,000
Concordia College	Fort Wayne, Ind.	1850	Lutheran	4	..	..	..	..	..	....	..	60	88	3,000
Indiana Asbury University	Greencastle, Ind.	1835	Methodist Episcopal	9	9	..	..	1	7	196	..	....	172	.....
Hanover College	Hanover, Ind.	1833	Presbyterian	7	7	..	2	1	3	....	2	44	74	7,000
Hartsville University	Hartsville, Ind.	1854	United Brethren	7	5	0	9	0	..	....	3	110	7	503
Northwestern Christian Univ.	Indianapolis, Ind.	1854	Disciples	15	15	..	..	2	2	....	4	100	81	5,000
Howard College	Kokoma, Ind.	1869	None	5	..	..	4	..	..	....	..	..	69	.....
Union Christian College	Merom, Ind.	1858	Christian	4	4	..	7	..	..	6	3	147	9	400
Moore's Hill College	Moore's Hill, Ind.	1854	Methodist Episcopal	5	5	..	5	..	..	46	..	130	12	340
University of Notre Dame	Notre Dame, Ind.	1842	Roman Catholic	35	35	..	26	9	..	....	10	155	58	12,000
Earlham's College	Richmond, Ind.	1859	Friends (Orthodox)	6	6	0	7	..	..	....	4	101	66	3,300
Burlington University	Burlington, Iowa.	1853	Baptist	5	2	3	5	..	..	....	1	10	41	2,000
Upper Iowa University	Fayette, Iowa.	1858	Methodist Episcopal	10	10	..	..	..	..	74	..	..	38	2,000
Iowa College	Grinnell, Iowa.	1848	Congregational	10	5	..	..	2	2	42	7	170	31	4,000
Iowa State University	Iowa City, Iowa.	1860	None	32	10	9	12	..	..	....	..	..	131	4,500
Iowa Wesleyan University	Mt. Pleasant, Iowa	1855	Methodist Episcopal	9	9	..	5	..	..	....	..	98	129	2,500
Cornell College	Mt. Vernon, Iowa.	1857	" "	13	8	0	5	0	4	56	5	262	20	4,000
Central University of Iowa	Pella, Iowa.	1854	Baptist	7	4	..	9	..	..	....	2	105	18	2,000
Tabor College	Tabor, Iowa.	1866	Congregational	5	5	0	6	0	0	....	..	161	18	3,000
Baker University	Baldwin City, Kan.	1857	Methodist Episcopal	8	6	2	..	1	1	21	..	....	44	2,000
State University	Lawrence, Kan.	1864	State	8	..	..	..	2	..	....	..	..	27	.....
Centre College	Danville, Ky.	1819	Presbyterian	6	6	..	6	..	..	12	3	80	57	5,000
Georgetown College	Georgetown, Ky.	....	Baptist	7	7	..	1	1	..	....	1	41	94	.....
Kentucky University	Lexington, Ky.	1858	Disciples	26	26	..	..	2	3	....	..	..	173	20,000
Bethel College	Russellville, Ky.	1856	Baptist	8	6	0	8	2	3	....	..	..	175	1,000
St. Mary's College	St. Mary's Station, Ky.	1821	Roman Catholic	7	7	..	..	..	..	....	1	14	79	800
Louisiana State University	Baton Rouge, La.	1860	None	11	7	0	7	0	0	....	7	47	68	.....
St. Charles College	Grand Coteau, La.	1837	Roman Catholic	15	8	..	..	..	..	....	1	15	62	4,000
College of the Immaculate Conception	New Orleans, La.	1859	Roman Catholic	9	..	..	..	..	..	200	..	..	....	8,000
Bowdoin College	Brunswick, Me.	1798	Congregational	22	16	6	4	1	12	....	..	..	136	35,000

TABLE OF COLLEGES.—*Continued.*

NAME.	Location.	Date of organization.	Denomination.	Professors and instructors					Number of students unclassified.	Prepar'y Depart.		No. of students collegiate dep't.	Volumes in library.
				Whole number of faculty.	Resident professors.	Non-resident professors.	Instructors.	Tutors.	Endowed professorships.		Number of instructors.	Students.		
Bates College	Lewiston, Me	1863	Baptist	7	4	1	6	1	..	....	4	68	96	5,000
Colby University	Waterville, Me	1820	Baptist	7	5	..	..	1	2	....	..	....	52	10,000
St. John's College	Annapolis, Md	1789	State	8	6	2	11	2	0	....	..	61	64	3,000
Loyola College	Baltimore, Md	1853	Roman Catholic	8	10	..	..	..	..	....	..	....	....	20,000
Rock Hill College	Ellicott City, Md	1857	" "	22	14	8	..	..	..	....	8	110	46	6,800
St. Charles College	" "	1848	" "	12	12	..	..	..	..	180	..	....	....	4,000
Mt. St. Mary's College	Emmettsburg, Md	1808	" "	26	..	..	..	..	..	161	..	....	....	8,000
Frederick College	Frederick, Md	1797	State	3	..	..	3	..	..	88	..	....	21	2,300
Western Maryland College	Westminster, Md	1868	Methodist Protestant	13	5	8	..	..	0	....	4	35	73	2,500
Amherst College	Amherst, Mas	1821	Congregational	21	14	4	3	..	7	....	..	....	268	28,000
Boston College	Boston, Mass	1864	Roman Catholic	9	..	..	..	..	..	....	..	....	....	3,000
Harvard College	Cambridge, Mass	1638	None	33	16	7	12	6	13	....	..	....	637	134,000
Tufts College	College Hill, Mass	1855	Universalist	13	9	7	17	2	6	....	..	....	62	12,000
Williams College	Williamst'n, Mass	1793	Congregational	13	10	0	1	0	5	....	..	....	119	15,000
College of the Holy Cross	Worcester, Mass	1843	Roman Catholic	12	10	2	3	3	..	....	..	....	....	10,000
Adrian College	Adrian, Mich	1858	Methodist	6	6	..	3	..	..	30	..	71	32	.....
Albion College	Albion, Mich	1860	Methodist Episcopal	8	..	..	1	..	..	....	..	158	33	.....
Michigan University	Ann Arbor, Mich	1841	None	15	15	d	15	..	..	28	..	....	392	22,000
Hillsdale College	Hillsdale, Mich	....	Free Baptist	8	8	..	13	1	8	....	12	74	....	4,500
Kalamazoo College	Kalamazoo, Mich	1855	Baptist	9	4	..	5	..	..	....	6	121	30	2,100
Olivet College	Olivet, Mich	1859	Congrega'l & Presby'n	13	7	1	5	..	4	....	..	123	50	4,000
University of Minnesota	Minneapolis, Minn	1868	State	11	5	0	6	..	..	....	..	196	36	6,000
Mississippi College	Clinton, Miss	1851	Baptist	10	5	0	3	2	0	....	5	134	25	2,000
University of Mississippi	Oxford, Miss	1848	State	19	19	0	..	..	..	....	4	133	127	5,000
Tougaloo University	Tougaloo, Miss	1870		10	9	1	12	..	2	....	7	210	....	.....
St. Vincent's College	CapeGirardeau, Mo	1844	Roman Catholic	9	..	0	8	..	0	....	0	0	159	5,500
University of Missouri	Columbia, Mo	1840	State	16	15	5	4	..	16	51	0	0	294	7,000
Central College	Fayette, Mo	1871	Meth. Epis. South	5	5	0	0	0	5	....	3	26	78	.....
Westminster College	Fulton, Mo	1852	Presbyterian	6	6	0	6	0	..	31	..	20	49	2,500
Hannibal College	Hannibal, Mo	1868	Meth. Epis. South	5	5	0	0	0	0	....	2	35	73	400
St. Joseph's College	St. Joseph, Mo	1867	Roman Catholic	10	8	2	3	..	1	....	3	178	....	600
St. Louis University	St. Louis, Mo	1832	" "	20	19	1	..	0	0	56	3	90	52	24,000
Washington University	" "	....	None	41	24	0	17	..	..	8	22	320	31	.....
College of the Chris'n Brothers	" "	1859	Roman Catholic	25	18	0	7	0	0	....	15	450	39	10,000
Dartmouth College	Hanover, N. H	1770	Congregational	33	16	11	4	1	7	....	0	0	264	46,000
Rutgers College	NewBrunsw'k, N.J	1771	Reformed	23	12	0	0	1	4	....	10	175	144	.....
College of New Jersey	Princeton, N. J	1748	Presbyterian	16	12	2	18	4	7	....	..	....	369	20,000
Seton Hall College	South Orange, N.J	1856	Roman Catholic	8	7	2	3	..	0	....	..	....	100	8,000
Alfred University	Alfred, N. Y	1836	Baptist	21	..	..	..	..	..	238	..	90	80	6,000
St. Bonaventura College	Allegany, N. Y	1859	Roman Catholic	14	14	..	..	..	..	120	..	....	....	.....
St. Stephen's College	Annandale, N.Y	1858	Episcopal	6	6	0	4	0	0	....	6	17	58	2,000
St. John's College	Brooklyn, N. Y	1870	Roman Catholic	8	..	..	..	..	..	140	..	....	....	.....
Canisius College	Buffalo, N. Y	1870	" "	10	9	1	..	..	..	....	..	....	71	2,000
St. Joseph's College	" "	1862	" "	14	13	1	10	2	..	231	4	150	....	1,500
Hamilton College	Clinton, N. Y	1812	Presbyterian	12	11	1	11	0	8	....	..	....	161	12,000
St. John's College	Fordham, N. Y	1840	Roman Catholic	24	23	1	0	0	0	..	6	70	68	15,000
Hobart College	Geneva, N. Y	1824	Protestant Episcopal	6	6	3	..	..	5	....	..	....	44	13,000
Madison University	Hamilton, N. Y	1832	Baptist	12	11	1	14	3	4	....	4	45	113	10,454
Cornell University	Ithaca, N. Y	1868	None	49	21	14	3	11	..	....	..	....	506	35,000
College of the City of N. Y	New York, N. Y	1866	"	15	15	0	36	22	0	....	36	540	344	21,000
College of St. Francis Xavier	" "	1847	Roman Catholic	34	22	4	3	..	0	....	13	357	90	16,000
Columbia College	" "	1754	Episcopal	9	8	0	1	2	1	....	..	....	124	15,600
Manhattan College	" "	1863	Roman Catholic	10	9	1	5	0	0	....	36	680	85	6,500
University of City of N. Y	" "	1831	None	35	35	0	0	0	..	....	..	....	57	3,046
University of Rochester	Rochester, N. Y	1850	Baptist	9	9	0	0	0	3	6	..	....	148	11,000
Union College	Schenectady, N.Y	1795	None	15	15	0	15	1	12	....	4	....	119	18,000
Syracuse University	Syracuse, N. Y	1871	Methodist Episcopal	9	8	1	1	0	..	....	..	....	104	1,563
Davidson College	Davidson Vill., N.C	1837	Presbyterian	7	7	0	0	0	0	9	..	....	96	6,000
Rutherford Male and Female College	Excelsior, N. C	1870	None	5	2	2	4	2	0	....	1	18	284	.....
Wake Forest College	Wake Forest, N.C	1833	Baptist	6	5	0	6	1	0	....	..	....	100	8,000
Trinity College	Trinity, N. C	1852	Meth. Epis. South	6	6	0	6	0	0	....	3	13	107	6,000
Ohio University	Athens, Ohio	1804		5	4	..	..	1	..	....	1	28	40	5,000
Baldwin University	Berea, Ohio	1856	Methodist Episcopal	10	9	1	1	..	1	97	..	67	93	1,000
St. Xavier College	Cincinnati, Ohio	1832	Roman Catholic	18	6	..	..	9	..	214	..	34	69	16,000
Mt. St. Mary's of the West	" "	1851	" "	6	6	..	10	..	..	....	..	25	61	10,000
Ohio Wesleyan University	Delaware, Ohio	1845	Methodist Episcopal	11	7	0	9	2	9	14	..	211	194	13,060
Kenyon College	Gambier, Ohio	1826	Protestant Episcopal	5	5	0	8	3	4	....	4	16	51	12,000
Denison University	Granville, Ohio	1831	Baptist	9	7	0	9	2	1	....	3	100	61	11,000
Hiram College	Hiram, Ohio	1866	Christian	6	6	..	9	3	..	....	8	302	....	2,500
Western Reserve College	Hudson, Ohio	1827	None	7	7	0	7	0	0	....	2	44	52	16,000
Ohio Central College	Iberia, Ohio	....	United Presbyterian	3	3	..	3	1	0	....	3	100	35	500
Marietta College	Marietta, Ohio	1835	None	10	7	1	1	1	..	....	2	70	87	24,000
Mount Union College	Mount Union, Ohio	1858	Methodist Episcopal	17	11	6	..	..	3	....	4	181	153	3,500
Oberlin College	Oberlin, Ohio	1833	Congregational	29	12	3	8	6	14	....	10	633	141	11,000
Miami University	Oxford, Ohio	1824	State	6	6	..	..	..	..	....	1	28	78	9,000
"One Study" University	Scio, Ohio	1859	Methodist Episcopal	18	9	4	..	..	..	....	..	....	337	.....

TABLE OF COLLEGES.—*Continued.*

NAME.	Location.	Date of organization.	Denomination.	Professors and instructors.						Number of students unclassified.	Prepar'y Depart.		No. of students collegiate dep't.	Volumes in library.
				Whole number of faculty.	Resident professors.	Non-resident profe sors.	Instructors.	Tutors.	Endowed professorships.		Number of instructors.	Students.		
Wittenberg College	Springfield, Ohio	....	Evangelical Lutheran	5	5	..	..	2	5	....	2	66	79	8,000
Heidelberg College	Tiffin, Ohio	1850	Reformed	5	5	..	6	1	..	....	..	83	61	4,000
University of Wooster	Wooster, Ohio	1870	Presbyterian	9	9	..	..	..	..	....	2	35	134	2,500
Wilberforce University	Xenia, Ohio	1856	Methodist	7	5	2	4	4	0	1	5	94	5	3,000
Xenia College	" "	1850	Methodist Episcopal	7	7	..	..	..	..	24	1	26	88	350
Antioch College	Yell'w Springs, O.	1853	Unitarian Cong	6	5	0	9	3	5	85	8	50	16	5,000
Pacific University	Forest Grove, Oreg	1859		5	..	..	3	..	..	96	..	46	18	5,000
Christian College	Monmouth, Oreg.	....		9	..	..	..	..	..	52	..	79	126	.....
Willamette University	Salem, Oreg	1851	Methodist Episcopal	7	7	..	..	..	..	....	5	190	42	2,000
Muhlenberg College	Allentown, Pa	1848	Lutheran	6	6	0	..	1	1	....	2	32	66	3,000
Lebanon Valley College	Annville, Pa	1866	United Brethren	6	5	0	0	2	0	....	2	163	25	.....
Dickinson College	Carlisle, Pa	1783	Methodist Episcopal	7	7	0	0	2	..	....	..	....	87	30,000
Lafayette College	Easton, Pa	1832	Presbyterian	25	16	3	1	5	..	....	..	....	257	.....
Pennsylvania College	Gettysburg, Pa	1832	Lutheran	10	9	1	1	3	5	6	2	47	74	18,300
Franklin and Marshall College	Lancaster, Pa	1853	German Reformed	7	5	0	0	2	0	....	2	42	72	12,000
Lewisburg University	Lewisburg, Pa	1847	Baptist	6	6	0	..	..	2	6	3	71	73	5,000
Lincoln University	Lower Oxford, Pa.	1853	Presbyterian	19	6	8	4	..	4	....	4	89	85	3,000
Allegheny College	Meadville, Pa	1815	Methodist	6	6	..	..	..	6	....	..	46	53	11,050
Palatinate College	Myerstown, Pa	....	German Reformed	6	..	..	..	..	..	288	..	....	....	600
Westminster College	Wilmington, Pa	1852	United Presbyterian	5	5	0	1	..	..	....	4	41	85	3,000
La Salle College	Philadelphia, Pa	1862	Roman Catholic	15	..	..	..	..	..	212	..	....	....	3,000
University of Pennsylvania	" "	1749	None	31	30	1	4	..	0	11	..	....	88	20,000
Western University of Penn	Pittsburgh, Pa	1819	"	14	9	0	5	0	3	23	4	115	41	2,700
Lehigh University	S. Bethlehem, Pa.	1866	Protestant Episcopal	7	6	1	6	..	..	130	..	....	....	2,000
Swathmore College	Swathmore, Pa	1869	Friends	7	6	1	13	..	..	....	20	190	70	2,000
Washington and Jefferson Col.	Washington, Pa	1802	Presbyterian	11	10	1	..	..	1	....	6	43	100	10,000
Waynesburg College	Waynesburg, Pa	1850	Cumb'd Presbyterian	9	7	2	9	0	4	68	3	96	112	1,500
Haverford College	W. Haverford, Pa.	1833	Friends	6	2	..	..	..	..	....	..	....	44	8,750
St. Vincent's College	Westmorel'd co., "	1846	Roman Catholic	26	..	..	..	..	..	....	..	36	145	6,000
Brown University	Providence, R. I.	1765	Baptist	11	9	..	3	..	4	....	..	....	224	42,000
College of Charleston	Charleston, S. C	1789	None	5	5	..	..	..	..	50	..	....	....	.....
University of South Carolina	Columbia, S. C	1806		12	10	2	1	..	0	70	..	....	....	27,000
Wofford College	Spartanburg, S. C.	1853	Meth. Epis. South	6	6	0	6	..	..	....	2	29	92	15,000
E. Tennessee Wesleyan Univer	Athens, Tenn	1867	Methodist Episcopal	7	7	0	7	1	0	....	..	....	80	2,200
King College	Bristol, Tenn	1868	Presbyterian	4	4	..	..	..	1	61	2	85	36	.....
Greenville and Tusculum Col.	Greenville, Tenn	1868		6	4	2	7	1	1	....	1	87	12	5,000
West Tennessee College	Jackson, Tenn	....		4	..	..	..	..	..	152	..	....	....	.....
East Tennessee University	Knoxville, Tenn	1869	None	14	8	..	5	1	8	....	4	182	62	1,200
Cumberland University	Lebanon, Tenn	1842	Cumb'd Presbyterian	22	5	2	7	4	0	....	2	87	103	1,000
Maryville College	Maryville, Tenn	1819	Presbyterian	3	3	..	6	1	..	....	3	86	30	2,000
Union University	Murfreesborough, Tenn	1848	Baptist	5	..	..	..	..	..	161	..	....	....	.....
Central Tennessee College	Nashville, Tenn	1866	Methodist Episcopal	6	6	..	..	..	..	....	6	241	....	450
University of Nashville	" "	1785	None	23	20	0	3	0	0	....	7	221	37	10,000
Fisk University	" "	1867	"	5	5	0	0	0	0	....	7	33	12	720
University of the South	Sewanee, Tenn	1868	Protestant Episcopal	8	8	..	4	..	..	228	..	....	....	5,000
University of St. Mary	Galveston, Tex	1854	Roman Catholic	8	8	..	..	..	..	....	4	115	35	500
Henderson College	Henderson, Tex	1871		..	..	..	7	..	0	315	..	....	....	.....
Baylor University	Independence, Tex	1846	Baptist	8	5	3	2	1	2	....	..	....	120	2,700
University of Vermont	Burlington, Vt	1801	None	14	8	5	2	0	1	....	..	....	47	15,000
Middlebury College	Middlebury, Vt	1797	Congregational	7	7	1	8	0	2	....	..	....	54	12,000
University of Virginia	Charlottesville, Va.	1824	State	19	15	..	4	0	15	....	..	....	240	37,000
Emory and Henry College	Emory, Va	1838	Meth. Epis. South	5	..	..	..	..	..	....	..	88	92	13,580
Hampden Sidney College	Hamp. Sidney, Va.	1775	Presbyterian	5	5	0	5	0	..	....	..	....	88	7,000
Washington & Lee University	Lexington, Va	1871		20	13	..	7	..	..	....	..	....	240	10,000
Virginia Military Institute	" "	1839	None	12	12	0	..	..	2	....	..	....	300	5,000
Roanoke College	Salem, Va	1852	Lutheran	6	6	0	8	2	0	....	2	32	118	9,000
College of William and Mary	Williamsburg, Va.	1693	Episcopal	6	5	0	6	1	0	....	2	35	....	6,000
Bethany College	Bethany, W. Va	1841	Disciples	5	..	..	..	1	..	21	..	....	103	.....
West Virginia University	Morgant'wn, W.Va	1867	State	13	10	3	13	1	13	....	3	108	71	3,000
Beloit College	Beloit, Wis	1847	Congregational	7	6	0	7	0	6	....	2	103	54	7,200
Galesville University	Galesville, Wis.	1855	Methodist Episcopal	4	4	..	..	..	..	....	..	105	33	4,500
University of Wisconsin	Madison, Wis	1848	State	27	17	..	10	..	..	....	9	153	68	4,600
Milton College	Milton, Wis	1867	Seventh-Day Baptist	9	4	..	3	2	..	....	9	160	78	1,500
St. John's College	Prairie du Chien, Wis	1865	Roman Catholic	15	..	..	..	..	..	130	..	....	....	.....
Racine College	Racine, Wis	....	Episcopal	7	6	..	..	1	..	....	10	155	65	2,500
Ripon College	Ripon, Wis	1863	Congregational	10	7	0	11	4	..	....	..	150	50	3,000
Northwestern University	Watertown, Wis.	1865	Evangelical Lutheran	7	7	..	2	..	4	....	2	102	18	1,800
Georgetown College	Georgetown, D. C.	1789	Roman Catholic	5	17	2	19	..	0	56	..	....	50	30,000
National Deaf-Mute College	Washington, D. C.	1864	National	10	5	2	1	2	..	4	3	24	18	600
Columbian College	" "	1822	Baptist	24	22	2	2	1	..	....	7	72	40	5,000
Gonzaga College	" "	1858	Roman Catholic	9	9	..	..	..	..	....	..	107	....	.....
Howard University	" "	1866	Congregational	22	16	6	5	1	0	....	5	100	35	7,850
Santa Fé University	Santa Fé, N. Mex.	1870	Presbyterian	4	..	..	..	..	..	51	..	....	....	40
University of Deseret	Salt Lake C'y, Utah	1850	Mormon	8	8	..	13	5	..	....	5	355	12	2,205
University of Washington	Seattle, Wash. Ter.	....		2	2	..	..	..	..	....	2	48	....	.....
Holy Angels College	Vancouver City, "	1872	Roman Catholic	3	3	..	..	..	..	56	..	....	....	.....

COLLEGE HILL, a post village of Hamilton co., Ohio, 6 m. N. of Cincinnati, and the seat of two institutions of learning, viz.: Farmer's college, formerly Carey's academy, founded in 1846, and having in 1870 4 instructors and 45 students; and the Ohio female college, founded in 1848, and having in 1870 13 instructors, 130 students, and a library of 1,000 volumes.

COLLES, Christopher, an American engineer, born in Ireland about 1738, died in New York in 1821. He was educated under the care of Richard Pococke, the oriental traveller, after whose death he emigrated to America, and in 1773 delivered lectures in New York upon inland lock navigation. He was the designer of one of the first steam engines built in the country. In 1774 he submitted proposals for the construction of a reservoir for the supply of the city of New York with water. Afterward he gave instruction to the artillery of the United States upon the use of projectiles, until the arrival of Baron Steuben in 1777, when a change was made in the organization of the department. In November, 1784, he presented a memorial to the New York assembly recommending that Lake Ontario should be connected with the Hudson by means of canals and other improvements. He surveyed the obstructions in the Mohawk river, and the results of the survey were published in 1785. He also published an elaborate pamphlet in regard to inland navigation. The revolution having prevented the construction of the reservoir which he had projected, he offered to undertake the supply of New York from outside of the city by means of pipes, and was probably the first person who drew attention to the subject. He personally explored the roads of the state of New York and published a book describing them. He exhibited much ingenuity in a great variety of employments, but was always poor. At length he was appointed superintendent of the academy of fine arts in New York. He was the friend of Hamilton, Jefferson, and other eminent men, and was honored as the original suggester of the canal system of New York.

COLLETON, a S. county of South Carolina, bordering on the Atlantic, bounded S. W. by the Combahee river; area, 1,672 sq. m.; pop. in 1870, 25,410, of whom 16,492 were colored. The Edisto, Ashepoo, and Salkehatchie are the principal rivers. Much of the land is flat, alluvial, and swampy; the drier parts are fertile. The palmetto and cabbage palm are here indigenous. The South Carolina and the Savannah and Charleston railroads traverse the county. The chief productions in 1870 were 207,927 bushels of Indian corn, 52,825 of sweet potatoes, 2,335 bales of cotton, 8,742,271 lbs. of rice, and 1,040 hhds. of sugar (all that was produced in the state except 15 hhds.). There were 1,679 horses, 4,264 milch cows, 6,237 other cattle, 3,314 sheep, and 17,508 swine. Capital Waterborough.

COLLETON, James, a colonial governor of South Carolina. He was appointed in 1686, during the attempt to carry out Locke's constitution, and in the interest of the lords proprietors, one of whom was his brother. He received with his appointment the dignity of landgrave and 48,000 acres of land. On his arrival he found the colonial parliament unwilling to recognize the constitution, and he at once excluded the refractory members. A new assembly was elected in 1687, in avowed opposition to the governor, and the people resisted his collection of quitrents. The assembly imprisoned his secretary, seized the records, and defied the governor and his patrons. In 1689 Colleton, pretending danger from Spaniards and Indians, called out the militia and declared martial law; but as the militia were the people themselves, this effort was futile. In 1690 William and Mary were proclaimed, and the representatives of South Carolina deposed Colleton and banished him.

COLLETTA, Pietro, a Neapolitan patriot, born in Naples, Jan. 23, 1775, died in Florence, Nov. 11, 1831. He was an officer of artillery and civil engineer, took an active part in politics during the French invasion of Naples, distinguished himself in the army under Joseph Bonaparte, and was made by Murat in 1808 intendant of Calabria, and in 1812 general and director of bridges and public roads. When the Bourbons returned to power, he was for some time imprisoned. On the outbreak of the revolution of 1820 he was sent as viceroy to Sicily, but was soon recalled and appointed minister of war. After the Austrian intervention he was banished to Brünn in Moravia, but afterward he was permitted to reside in Florence. He wrote *Storia del reame di Napoli dal* 1734 *sino al* 1825 (2 vols., Capolago, 1834; 2d ed., 4 vols., 1837; English translation by S. Horner, with a supplementary chapter, 2 vols., Edinburgh, 1858).

COLLIER, Arthur, an English clergyman, born at Langford Steeple, Wiltshire, in 1680, died in 1732. He was rector of Langford, a living which had belonged successively to his great-grandfather, grandfather, and father. In 1713 he published a work entitled *Clavis Universalis*, maintaining the non-existence and the impossibility of the existence of any objects external to the mind. Berkeley had three years before advanced incidentally a similar theory, but the two philosophers appear to have had no knowledge of each other. Collier was inferior to his contemporary rather in the graces of composition than in acuteness or method; and yet, while Berkeley's publication produced a profound impression, the *Clavis Universalis* attracted not the slightest attention in England. In Germany a copious and able abstract of its contents was given in 1717, in a supplemental volume of the *Acta Eruditorum*, and in 1756 a complete translation of it into German was made by Eschenbach. Thus rendered accessible in Germany, Collier has enjoyed among the thinkers of that country high repute for talent and originality. The best view of his

doctrines, as compared with those of Berkeley, is that given by Tennemann. Reid was the first to call attention to the *Clavis Universalis* in England; and in 1837 it was published in London as part of the contents of a volume of metaphysical tracts, which had been prepared for the press by Dr. Parr. In the same year the memoirs of his life and writings, by Robert Benson, appeared in London. The *Clavis* was subsequently reprinted in Edinburgh. Other publications of Collier were the "Specimen of True Philosophy" (1713), the "Logology" (1732), and two controversial sermons. In religion he was an Arian, and also a high churchman on grounds which his associates could not understand.

COLLIER, Jeremy, an English nonjuring clergyman, born at Stow Qui, Cambridgeshire, Sept. 23, 1650, died in London, April 26, 1726. He was educated at Caius college, Cambridge, and became successively chaplain to the countess dowager of Dorset, rector of Ampton in Suffolk, and in 1685 lecturer of Gray's Inn, London. Upon the revolution he engaged in controversy with Bishop Burnet and others, and opposed the new organization of church and state during many years in numerous pamphlets, which were written with great ability. He was imprisoned for a short time in 1688 for a publication in favor of the dethroned monarch. He was again arrested in 1692 on the Kentish coast, on the supposition that he was in communication with the Jacobites across the channel, and refusing to acknowledge the jurisdiction of the court by putting in bail, he was again imprisoned, but was finally released without trial. In 1696, when Friend and Parkyns were condemned for plotting to assassinate King William, Collier attended the prisoners in Newgate, accompanied them to the gallows at Tyburn, and there gave them absolution. The result was that a warrant was issued for his arrest, but he made his escape, and it could not be executed. From his hiding place he published a defence of his conduct, which immediately received many answers, one of which was signed by the two archbishops and all the bishops then in London, 12 in number. He again refused to acknowledge the jurisdiction of the court by putting in bail, and suffered sentence of outlawry, which was not reversed during the remainder of his life. He published in 1697 the first volume of his "Essays upon several Moral Subjects," and in the next year his "Short View of the Immorality and Profaneness of the English Stage." The latter engaged him in a lively controversy with Congreve and Vanbrugh, and the wits of the time. The discussion lasted ten years, and contributed decidedly to the improvement of the English stage. Among his later publications were a translation of Moreri's "Historical Dictionary" (1701–'21), an "Ecclesiastical History of Great Britain" (1708–'14), two additional volumes of "Essays upon Moral Subjects," and a volume of "Practical Discourses" (1725).

COLLIER, John Payne, an English author and commentator on Shakespeare, born in London in 1789. He studied law, and was for several years parliamentary reporter for the "Morning Chronicle" newspaper. He published in journals and reviews criticisms and annotations on the old English poets, in 1820 the "Poetical Decameron," a series of dialogues on the poets chiefly of the reigns of Elizabeth and James I., and in 1825 a poem entitled the "Poet's Pilgrimage." In 1825–'7 he edited a new edition of Dodsley's "Old Plays," adding 11 additional plays to it. In 1831 appeared his "History of English Dramatic Poetry," containing a great variety of information collected from original sources. Many valuable collections, such as the library of the duke of Devonshire and that of Lord Ellesmere, were in consequence of this publication opened to his researches. In Lord Ellesmere's collection of MSS. he found most of the materials for his series of "New Facts" and "Further Particulars" concerning Shakespeare and his works, published between 1835 and 1839. In 1844 he completed the publication of a new life of Shakespeare, and a new edition of his works, for which he had collected materials during 20 years, the text being founded on a new collation of the old editions. In 1852 he published "Notes and Emendations" to the text of Shakespeare, from early manuscript corrections on the margin of a recently discovered copy of the folio of 1632, and the next year a new edition of the plays, with the text regulated by collation of this folio and of other old editions. These publications excited much interest and discussion concerning the date and authority of the manuscript corrections. Mr. Collier has been a zealous member of both the Camden and Shakespeare societies, for which he has edited several interesting works, as the "Memoirs of Edward Alleyn" (1841), the "Diary of Philip Henslowe" (1845), "Memoirs of the principal Actors in Shakespeare's Plays" (1846), and "Extracts from the Registers of the Stationers' Company from 1557 to 1580" (1848–'9). In 1865 he published a "Bibliographical Account of Rare Books" (2 vols.), and in 1866 commenced a series of reprints of the early English poets and pamphleteers. He receives an annual pension from the crown of £100, granted by Sir Robert Peel.

COLLIERY, a term applied to coal-mining establishments, including the mines, buildings, and machinery employed. In their simplest form, as now seen in the Alleghany coal field, where the strata lie nearly horizontal, and generally in the hills or mountains above the level of the streams, or common water level, the collieries employ little or no machinery; but at the deep and extensive mines of the Pennsylvania anthracite fields, and in the older mining districts of Europe, these establishments are of immense proportions, employing hundreds of hands and a vast capital. Primitively, the process of digging coal and other

minerals consisted in simply removing the surface earth, and quarrying the coal on the outcrops of the beds, and this was continued even to a late day. The most notable instance of modern surface coal mining was at the old Summit mines of the Lehigh, where the great



Fig. 1.—The Great Open Quarry of Anthracite, Summit Hill, Mauch Chunk Mountain, Pa.

Mammoth bed was uncovered to the extent of 30 acres, and produced 2,000,000 tons of coal up to 1847, when it was abandoned. The great bed, which was nearly 70 ft. thick at this place, formed an anticlinal with the axis near the surface where the quarry was opened. A tree which had grown over this spot and extended its roots into the coal bed below, having been uprooted by the wind, revealed the coal to a hunter, who reported the discovery, and from this grew the famous Lehigh coal mines. From the quarry method, the next step in advance introduced the art of mining, or under-ground work, and the establishment of collieries. Where the coal beds existed above water level, or near the surface, rude excavations were made into the bed; where they were small, simple galleries were formed in the solid coal from 4 to 12 ft. wide, with arched top and without timber. At the old Butterknowle workings on the southwest outcrops of the Newcastle (English) coal field, these galleries are three yards wide, with square pillars of coal of equal dimensions on each side. These mines are supposed to be 200 years old, and are from 40 to 50 ft. deep. In the Richmond, Va., coal field, galleries of the same character are found, driven at right angles to each other between square pillars, or at random when in faulty ground. These works are also in shallow pits, as all the coal of that field exists below the water level. They are apparently more than 100 years old, and are situated at Springfield on the N. E. edge of the Richmond coal field, where trees over 100 years of age were found during the year 1857 growing on the heaps of waste extracted from them. The most noted of these in the Pennsylvania anthracite fields were on the outcrops of the Mammoth, locally known as the Baltimore bed, near Wilkesbarre, and on the B bed, known as Smith's bed, below Plymouth, in the lower end of the Wyoming valley. These excavations were large, corresponding to the size of these great beds, and wide enough to admit horses and wagons to drive in and turn in the rooms or galleries thus formed.—All or most of the coal of England and Belgium exists below water level, and is mined by pits. Until the application of steam for general purposes in 1800, both coal and water were raised from these mines by horse power or by women; and this was continued even up to 1845, when the employment of women in the mines was prohibited by act of parliament. During 1842, 2,400 girls and women were at work in the mines of Scotland alone, mostly employed in conveying the coal to the surface. In some favored localities near



Fig. 2.—Mammoth Coal Bed.
a. The great quarry on the Mammoth coal bed.

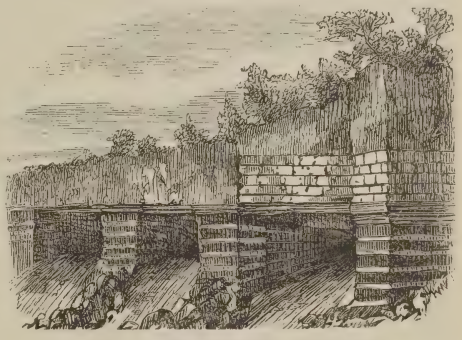


Fig. 3.—The old Baltimore Mines.

the streams, water power was made use of for pumping; in others, horse wains or gins and sometimes hand windlasses were used to raise both coal and water; but more frequently women were employed as beasts of burden, not only to convey the coal along the low entries, in which they could not stand upright, but also up long lengths of ladders from the bottom of small pits to the surface. The work that was performed by women in these old collieries is almost incredible. Robert Bald, in his "General View of the Coal Trade of Scotland" (1808), says: "We have seen a woman take on a load of 170 pounds of coal and travel with this up the dip of the bed, 150 yards, and then ascend a pit by stairs or ladders 117 ft., no less than 24 times during a day of 10 hours." Formerly the colliers of England were practically serfs, and kept in a state of bondage to the proprietors of the collieries where they were born. They were held to be part of the establishment for carrying on the coal mines, and if the mines were leased the colliers were included in the lease. In the

habeas corpus act it was declared "that this present act was in no way to be extended to colliers and salters." But in 1775 an act of parliament declared that colliers and salters were no longer "transferable with the collieries and salt works;" and upon certain conditions they were to be gradually emancipated, while others were prevented from coming into such a state of servitude. Even after the general introduction of the steam engine at the British mines, for raising coal and hoisting or pumping water (though pumps were seldom used until a much later day), women were employed to convey the coal from the mines to the bottom of the pit, a distance of from 100 to 300 yards, with loads of 100 or 150 pounds in bags on their backs, traversing a total distance of nearly 10 miles a day in going and returning. About this time wheelbarrows were also used, and afterward sleds or "cauves," which were pulled by women or boys; and at a still later day "bogies," pushed or pulled by boys, were introduced. These were provided with narrow tram wheels, which ran in grooved rails of wood. Boys of very tender age were employed in the British mines up to a late date to work the "steel mills," which gave light by the production of sparks from a circular wheel armed with steel striking against flints; as "trappers" to open and shut the many doors then used to regulate and guide the air currents; to blow the small fans often used to convey air to points beyond the range of the air currents; and to "put" or push the bogies. But for the last 20 years boys under 12 years of age have been prohibited from working in the British coal mines. In Belgium, however, both women and children are still employed in and about the mines. Wages are so small that it requires the united exertions of fathers, mothers, and children to earn a livelihood.—In England, Belgium, and France, most of the coal lies deep below water level, and can only be reached by expensive pits, which are owned and worked by wealthy proprietors or large companies. In the older mining districts, where the outcrop coal has been long since exhausted, or partially worked by the old methods, in which from half to two thirds of the coal was lost, these pits are constantly growing deeper, and now reach a great depth. W. W. Smith states that a coal pit exists in the province of Hainaut in Belgium, at the colliery des Viviers at Gilly, near Charleroi, which has been sunk 3,411 ft. We do not know that coal has been mined at that

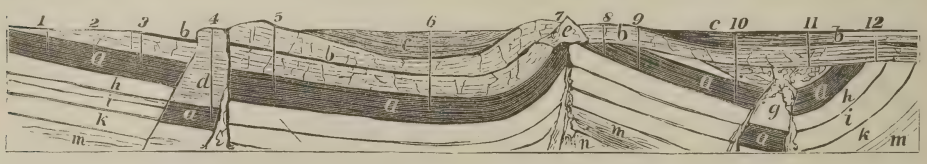


Fig. 4.—English Coal Measures and Unconformable Rock.

1, 2, 3, &c., pits; *a*, coal measures; *b*, Permian; *c*, cretaceous, &c.; *d*, slip dike; *e*, trap dike; *g*, trap dike; *h*, Devonian; *i*, Silurian; *k*, Cambrian; *m*, gneiss; *n*, granite.

depth, however. In many cases these pits penetrate the overlying Permian formation, beneath which most of the carboniferous formations of England and France are concealed, and where the existence of coal was formerly doubted. Indeed, more than two thirds of the English coal measures are supposed to lie beneath the more recent rocks; while over 40,000 sq. m. of France is covered by the Permian, triassic, cretaceous, and tertiary formations, beneath which coal may exist; or, if it does not exist, it is the exception and not the rule. The geological order of the sedimentary rocks requires the existence of the carboniferous below the Permian; and as far as we know, from their outcrop and from the evidence of the deepest pit yet sunk, this succession does in fact prevail, though there may be localities in which the regular order is interrupted. This alone would create doubt, and make the most enterprising cautious. Yet, step by step, the miners of England have approached this doubtful ground, and are now 2,000 ft. beneath the Permian rocks, where no one but William Smith, the father of English geology, ever dreamed of looking for coal in his day. And this advance into unknown ground will doubtless be continued until the deep coal beds, reposing 10,000 to 20,000 ft. beneath the sea, will be won and worked.—In the great American bituminous fields mining operations are much more diversified than in the bituminous fields of Europe. In the Alleghany and central coal fields the carboniferous rocks are the latest and highest geological formations; consequently their wide horizons, covering nearly 100,000 sq. m., may be penetrated at any point without hazard. While the coal of the former is generally found in the hills or mountains, and accessible by drifts or tunnels above the natural drainage, that of the latter is generally below the water level, yet may be entirely developed by pits less than 1,000 ft. in depth. Of the 17,000,000 tons of coal mined from the Alleghany field in 1871, less than 1,000,000 tons were mined below the water level, and the remainder from drift or tunnel collieries, and generally from the former. Drift is a technical term for a tunnel, entry, or gallery driven through the coal horizontally, while the tunnel is a horizontal gallery driven through the rocky strata to reach the coal. The dip or undulations of the strata vary considerably, even in coal fields which have a general dip in

one direction, or that may be nearly horizontal. These elevations and depressions thus formed in the coal beds are locally termed saddles, horsebacks, swells, troubles, &c.;



FIG. 5.—Alleghany Coal Measures.
a, location of drift; *a'*, improper location; *b*, location of slope; *b'*, location of tunnel; *c*, location of pit.

where they are frequent they interfere seriously with the drainage. In locating collieries these peculiarities of dip are important questions, which may generally be determined by surface indications, when the coal beds and accompanying strata are above the water level. Yet hundreds of thousands of dollars are frequently expended in building railroads, houses, and other colliery appurtenances, before these preliminary investigations are made, and when it is too late to remedy the great inconveniences entailed. Many instances of this kind might be cited in the Alleghany coal field and elsewhere. One on the Philadelphia and Erie railroad involved $500,000 of useless expenditure. The drift should always be located at the lowest available point of dip (*a*, fig. 5); but if the lowest point to which mining operations should extend cannot be reached by drift, started on the outcrop of the bed and continued horizontally in the same, a tunnel may be made use of commencing in the rocky strata above or below the coal bed, in order to reach the bed horizontally, and secure natural drainage. When this mode is not available, the slope or the shaft method is resorted to. In many parts of the Alleghany coal field and its outlying basins the most productive beds of coal are on or near the tops of mountains, or at a considerable elevation above the valleys. In these situations locomotive railroads are impracticable, and inclined planes are used; they are operated by gravity, the loaded cars in descending drawing up the empty cars. On the Youghiogeny, Pa., and in the Frostburg, Md., mining districts, this form of colliery establishment is in general use; 1,000

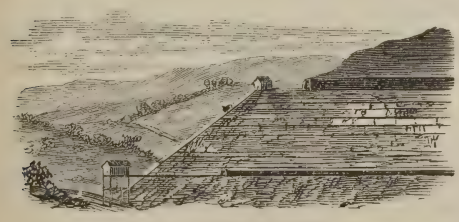


FIG. 6.—Incline and Drifts.

tons of coal per day are sometimes run over a single double-track plane. The most elevated coal of the Alleghany field is about 2,300 ft. above tide, while the lowest is probably 2,000 ft. below the Ohio river, near the mouth of the Great Kanawha, which is considerably deeper than the lowest coals of the central coal field in Indiana, Illinois, or Kentucky, but much less than the deepest coals of the western coal field in Kansas and Colorado, where the lower coal measures are probably 5,000 ft. beneath the tertiary rocks. In the Pennsylvania anthracite fields, however, we find still greater diversity of mining operations as the necessary results of a contorted or highly plicated form of stratification, in which the undulations of dip are most extreme and irregular. In these anthracite coal basins every known plan of drift, tunnel, slope, and shaft is employed. When the coal beds exist in the hills above the water level, drifts and counter-drifts, or upper levels, are used where the outcrop of the bed is exposed in an available locality; otherwise tunnels are made at the lowest practicable point. In these basins the coal beds usually incline at high angles of dip. However high the mountain may be on which they crop out, it is rare that they do not dip below the water level or into the basins at the base of the mountain; and still more seldom are the beds found in horizontal strata, except in the synclinals or at the bottom of the basins, where they often occur in horizontal position before curving to the opposite dip. The great basins of the anthracite fields are generally bordered by parallel mountain ranges, against the sides of which the coal beds crop out. These mountains, particularly in the interior of the fields, are cut through by numerous watercourses, which form gaps or gorges at right angles to the strike of the strata, and in these the outcrops of the coal beds descend to the water level. Thus the broken ends of the strata are exposed, and in these most of the drift collieries of the anthracite basins have been located. But when the outcrops are not thus exposed, and the elevation of the outcrop is sufficiently high above water level, the coal beds are cut by tunnels which penetrate the base of the mountains at right angles to the strike of the strata. When the coal is thus exhausted above the natural drainage, or when the amount of available coal above water level will not justify the expense of a tunnel, the slope method is generally adopted, particularly where the angle of dip is great. The slope is always formed in the coal, except when the undulations of dip require it to pass a short distance in the overlying or underlying strata. In this respect, technically speaking, the slope differs from the oblique or underlying shaft, which penetrates the rocky strata to reach the coal; though generally a shaft is perpendicular, however the strata may dip.—In addition to these peculiarities of the Pennsylvania anthracite formations and the consequent form of the mines and methods of development, a singular feature of the colliery establishments is the immense and costly structures known as breakers. These are generally masses of

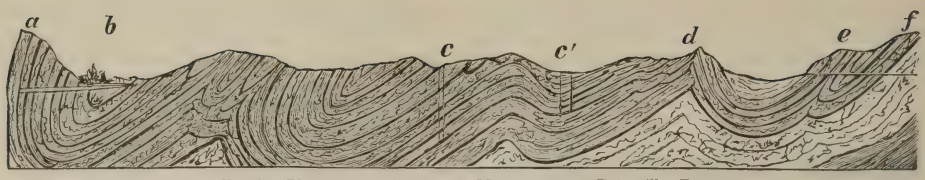


Fig. 7.—Plications of Anthracite Measures near Pottsville, Pa.
a, Sharp mt.; *b*, Pottsville; *c*, Deep pits; *c'*, Hickory and St. Clair pits; *d*, Mine hill; *e*, irregular axis; *f*, Broad mt.

heavy framework of great elevation and strength, and are used for the fourfold purpose of breaking, selecting, separating, and storing the prepared coal. The breaker is built near the mouth of the mine, and the coal cars from the drift, tunnel, slope, or shaft are elevated by machinery to the top of the breaker. Here the coal is dumped into a wide shute provided with bar or flat screens and platforms. The coal is separated by passing over the screens and selected by the workmen on the platforms. The purest and best lump or large coal is thrown into a bin provided for the purpose, while the second size, or steamboat coal, passes into a second bin; and the remainder, excepting the dirt and slate or impurities, is put through the breaking rolls, which consist of from two to four heavy iron rollers provided with steel or chilled cast-iron teeth. In passing through these, the coal is broken into small pieces, and descends into a system of large circular screens which are constantly revolving, and which separate the coal into sizes known as pea, chestnut, stove, egg, and broken coal; and sometimes a larger size used for large ranges or heaters in hotels, puddling furnaces, &c. The sizes above this are steamboat and lump, which last is the largest, and generally used for blast furnaces, though the steamboat size is often mixed with the lump for this purpose. Formerly this preparation of anthracite was exceedingly wasteful, owing to imperfect breaking machinery, and a careless habit of crowding the whole mass, both large and small coal, through the breaking rolls without regularity or order. It is estimated that 20 to 25 per cent. of the coal was thus lost. To these defects must also be added that both pea coal and chestnut were wasted in "dirt banks" during the early days of the anthracite trade. Those old banks now yield a large amount of small or screened coal, the remainder being convertible into pressed blocks of patent fuel, or carbonic oxide gas as a fuel. The waste is now considerably less, as the chestnut, pea, and sometimes lime burners' coal is screened, and only the dust and impurities are rejected, which in well



Fig. 8.—Drift with dip and strike of inclining coal beds.



Fig. 9.—Slope, underground tunnel, and coal breaker.

arranged colliery establishments do not much exceed 10 per cent. of the whole. Yet this does not include a much greater waste in the inside of the mines, where a large percentage of small coal is often left in the "goaf," and not less than one third of the whole bed is abandoned as pillars. At the anthracite collieries, where the imperfect systems of "post and stall" and "pillar and breast" are still in general use, not less than one half the entire contents of the coal beds is wasted or lost; and in some cases the waste is still greater. In comparison with the English bituminous mines, this waste is 25 per cent. greater than that of the longwall and 30 per cent. greater than the bord and pillar systems of mining. The coal breaker was invented by a Mr. Batten, who appears to have conceived the idea from the crushing rollers used in Cornwall, England, for the purpose of breaking copper, tin, and other ores. His patent, however, was seriously defective, in not specifying or claiming the combination of the mechanical devices, instead of the direct application of the toothed rollers to breaking coal, while his patent fees were thought exorbitant by the colliery owners, and were successfully resisted. The invention ruined the inventor, while it has conferred immense benefits upon the anthracite trade. This method was introduced in 1844, before which time the coal was broken to sizes by hand hammers. To break the amount of coal now produced by one of these large collieries would require not fewer than 100 men, and in some cases 200 would be required. There are now more than 400 such coal breakers in use in the anthracite fields. The process is peculiar to the Pennsylvania anthracite mines, where the coal, owing to its great hardness, requires special preparation for economical combustion. It is thought by some that this preparation could be more economically done near the great coal marts, where all the waste, except actual impurities, could be sold, because the coal dust thus wasted is the best portion of the coal.—The Pennsylvania anthracite collieries are not only modified by the peculiar structure of the coal measures, but also by numerous distortions and faults which often seriously interfere with mining operations. The form and character of those faults are as peculiar and varied as the lithological structure. Dislocations of strata and crushed graphitic coal are the predominating forms of fault, but the replacement of the coal by rock and slate or shale is also frequent in the upper and smaller beds; while small local

slips and narrow dikes or walls of rock sometimes occupy cracks in the coal beds, but these do not penetrate above or below the bed. The great dikes and slips found in the English and some of the French coal strata are unknown in American coal fields, which, with the exception of the anthracite fields, are singularly free from faults and dislocations. But the anthracite fields of Virginia and New England are still more seriously injured, and



Fig. 10.—Slip Dike.

even partially destroyed, by faults resulting from excessive heat, violent lateral contraction, and the consequent contortion of the strata and pulverization or partial consumption of the carbon. These irregularities are important considerations in the establishment of collieries, as permanence and success depend greatly on the uniformity of the coal bed and the purity of the coal. These and other considerations have made the anthracite busi-

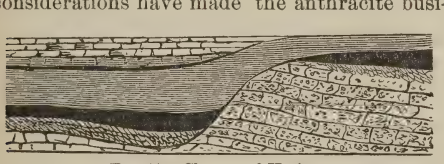


Fig. 11.—Change of Horizon.

ness more precarious and costly than the bituminous, and in all countries where anthracite is mined these peculiarities are observable to a greater or less extent. In addition to the cost of the great coal-preparing establishments, which frequently amounts to $100,000 or $150,000, the expense of sinking the pit or slope and opening the mines is also much greater than in the bituminous regions for corresponding depths. Both the measures

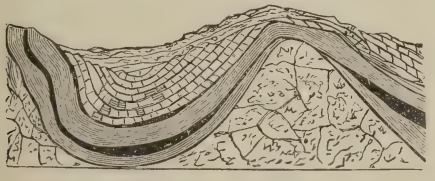


Fig. 12.—"Trouble"—volcanic formations.

and the coal are harder in the former than in the latter; and while the mining is conducted with but little powder in the one, the other requires immense quantities. Anthracite is almost exclusively obtained by blasting. At some of the mines more than 500 kegs of powder are used per month. The value of these collieries ranges from $30,000 to $500,000 each, but the average value cannot be less than $100,000 for the 437 collieries in existence in 1871, at which 52,227 men and boys were employed. The United States census of 1870 makes the value of 1,550 colliery establishments of the country $86,087,251; while the wages paid the 93,805 men and boys employed is given at $43,647,-118. — Hitherto the greatest amount of the Pennsylvania anthracite has been mined from the outcrops of the beds, by drifts, tunnels, and slopes; but as this portion of the beds approaches exhaustion shafts become necessary to penetrate the interior of the basins. The deepest shaft yet sunk in the anthracite fields is the Dundee pit in the Wyoming field, S. W. of Wilkesbarre, which is 700 ft. deep; but it only penetrated the upper beds, when it was

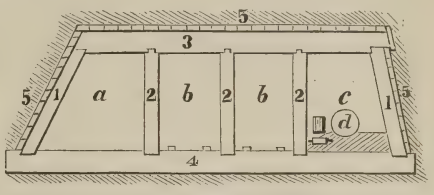


Fig. 13.—Section of Slope.

a, travelling way; *b*, *b*, hoisting ways; *c*, pump way; *d*, pump.—1, 1, legs; 2, centre props; 3, collar; 4, sill; 5, backing or laggins.

abandoned. The next in depth is the great Hickory shaft near St. Clair, in the southern anthracite field, which is 680 ft. deep to the Mammoth bed. Near the latter two large pits are now in progress (1873), which are each expected to penetrate 1,500 ft. to the same bed, and to cut nine or ten workable beds above the Mammoth. The depth of the slopes varies greatly; some of them have penetrated 900 ft. vertically and from 1,200 to 1,500 ft. on the inclination of the bed. The large slopes are often 20 to 24 ft. wide and 7 to 10 ft. high, and provided with two hoisting ways and a double pump way, or a pump and a travelling way. The following table shows the number and condition of the anthracite collieries of Pennsylvania:

DISTRICTS.	No. Collieries.	No. Shafts.	No. Slopes.	No. Drifts and Tunnels.
Schuylkill	164	13	141	102
Northumberland	33	0	18	52
Columbia	8	0	7	4
Dauphin	4	0	4	11
Luzerne—East	80	46	21	68
" West	102	31	43	42
Lehigh District	46	1	59	11
Total	437	91	293	290

Some of the recent anthracite shafts are of very great size. Several near Wilkesbarre are more than 40 by 20 ft. in dimensions, but this is generally acknowledged to be an unnecessary size in square or oblong shafts, as this form demands timber for support, and the timber must be proportionately large and of great length. This is an element of weakness and danger, and at best only of temporary utility.

The natural decay of wood unfits it for use in pits. But the chief defect is in the form of the pit, and the English mining engineers long since discovered this serious objection to square or oblong pits, and substituted the round pit,

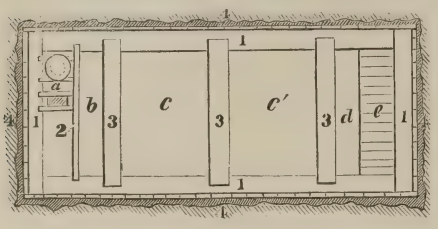


Fig. 14.—Pennsylvania Anthracite Shaft (section).

a, pump and rods; *b*, pump apartment; *c*, *c'*, hoisting apartments; *d*, travelling apartment; *e*, ladders.—1, 1, supporting timbers; 2, pump timbers; 3, 3, 3, dividing timbers; 4, backing plank.

in which brick, stone, or iron can be economically used to secure the sides of the shafts. Besides, this seems to be the only sure method of damming back the water, which in the timbered pits is allowed to enter the shafts and must consequently be pumped out at constant expense. But in circular pits all the water above the coal, and particularly the more abundant surface drainage, which is most seriously felt in the upper 300 to 500 ft., is dammed back with masonry or iron tubing. As the surface drainage always varies considerably in wet and dry weather, a portion of the pit is sometimes wet and sometimes dry, and this alternation, with the incident changes of temperature, induces decay when the pit is timbered, and replacement is dangerous and difficult. The great size of the Pennsylvania anthracite pits is the natural outgrowth of the great size of the coal beds. Nine tenths of the anthracite mines are from beds varying from 10 to 30 ft. in thickness. Mine cars of great size and of unwieldy proportions are used in many of them, with doubtful economy, since the most available systems of mining, known as bord and pillar and longwall, cannot be properly followed in steep-dipping beds with cars of greater capacity than one ton of coal each; yet the cars used in the anthracite mines generally contain from one and a half to three tons of coal, and weigh with their contents as much as five tons. They cannot be taken up the steep pitches by mules or be handled by the men; and this involves a second handling of the coal and some contrivance for getting it from the mines to the cars, which cannot leave the levels or gangways. Shutes are commonly used, but when the dip is too steep to admit the use of mules to draw the cars up to the mines, and too low for the coal to slide down a shute, great trouble and expense are involved. Besides, these systems of breast and pillar or post and stall mining are defective in many other respects. Some of the large anthracite pits are capable of producing 1,000 tons of coal per day; yet this has rarely been accomplished, from the difficulty of handling so many heavy cars at the top and bottom of the pit, or the greater difficulty of getting them to the bottom of the pit through a single level or double gangway, one on each side of the pit, to which the system in use, and the necessity of working the larger beds only, confine most of the anthracite mines. But this production is exceeded by much smaller and deeper English pits, in which cars or bogies holding from 8 cwt. to one ton are used. In some of these deep pits a regular production of 2,000 tons per day is not unusual, though 250 to 500 tons is more common.—The late mining laws both of England and Pennsylvania require two openings for ingress and egress to each mine, so as to secure the safe retreat of the workmen in case of accident, and more perfect ventilation. Some of the most serious and fatal accidents have been occasioned by the absence of a second outlet; one of the most notable was

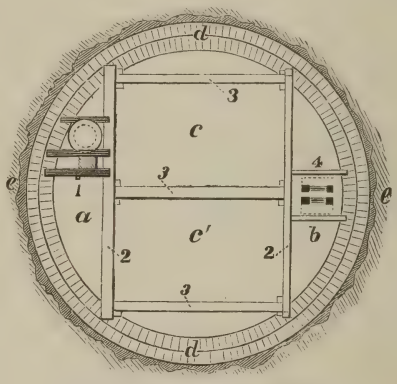


Fig. 15.—English Circular Shaft.

a, pump way; *b*, travelling way; *c*, *c'*, hoisting ways; *d*, brick or stone lining; *e*, rock.

the Avondale disaster, in the Wyoming valley, near Plymouth, Pa., Sept. 6, 1869. This was occasioned in all probability (though the fact was never established) by the exceeding dryness of the timbers in the upcast portion of the pit, which was divided by a partition of wood. One portion of the pit was used for hoisting coal and the admission of air, and the other for the egress of the mine vapors. At the bottom of the latter a furnace was in constant use, the heat from which made the timbers like tinder, and the soot could not fail to accumulate, as in ordinary chimneys. A spark only was necessary to ignite the one or the other. But in other cases, the burning of the structures erected over the pit's mouth, the destruction of a portion of the pit by explosion or caving, flooding of the mine by water, or the derangement of machinery, all point to the necessity of a second outlet from each mine, as a matter of common prudence. The methods of descending and ascending deep pits have been and still are very generally defective and

insecure. In the great mining districts of the world, both in coal and metalliferous mines, the ladder and the hoisting apparatus are the alternatives. To ascend and descend a pit of 1,000 to 1,500 ft. on ladders is nearly a day's work, while descent or ascent on the cages is dangerous. The number of accidents caused by the falling of cages or cars in the anthracite mines during 1871 was 13; and this has always been a fruitful source of mining accidents, partly from the crowding of men anxious to be first at work or first at home, on the cages or into the mining cars. The mining laws of most of the great mining districts prohibit the use of unsafe cages, and the crowding of men on either the car or the cage; but these laws are seldom enforced. The hoisting apparatus, elevators, or lifts used in hotels and manufactories are too slow for mining purposes; and though numerous safety cages have been invented, few if any are perfectly secure. Many "safety-catch" arrangements, however, are in use, which if kept in order would generally prevent serious accidents. The two most practical forms of clutches seem to be the "claw" and the "eccentric." The former are thrust out into the timbers or guides, and the latter hugs the guides on opposite sides when the rope breaks. One defect, however, of all such arrangements, very difficult to overcome, is that they sometimes act during the rapid descent of the cage, which in some cases is equal to the speed of a railroad train, and little short of the motion at the start in falling from a broken rope. Consequently all such devices are defective in pits, and the best cages are unsafe means of conveyance for the workmen. Yet on these, or still more rude and dangerous conveyances, or on ladders, ninety-nine out of every hundred miners depend for descent to and ascent from their work. In a few cases, during late years, "travelling rods" have been used with considerable success, though but rudely contrived and fitted up. They consist of two perpendicular oscillating rods, generally of wood, placed side by side and parallel to each other in the travelling apartment of the pit. Some of these are simply provided with steps, without guards, while in others the rods have platforms securely guarded against danger. In other cases, however, a single rod is used, on which platforms are fixed at intervals, with corresponding stationary platforms in the rock; but the latter plan is much inferior to the former, in which the rods are so balanced that the power required to operate them is but little, while the single rod must be lifted with its weight of men, ascending or descending. In descending the miner steps on one of the moving platforms which comes to the top of the pit, and as this only remains a few seconds, during the slow motion of turning the upper centre of the operating wheel, he must be ready to step on without delay, though a failure to do so would not be dangerous. The motion may be five to ten strokes per minute without difficulty. Immediately on reversing the rod descends 8 to 12 ft., meeting a corresponding platform on the ascending parallel rod; on this the miner steps, and the platform he left ascends, and the one he is on descends. Thus he steps from platform to platform and descends from 100 to 200 ft. per minute. In ascending the same rule is observed, except that the miner steps upon the ascending platform instead of the descending one; but whether ascending or descending, he is alternately now on one, and now on the other; and though 20 or more miners may be going up or going down at once, the balance is always nearly equal. The best mode of constructing these rods is to place them close together, with the platforms on opposite sides; and instead of two, four rods are preferred. In stepping from one platform to the other, the miners pass between the rods. In order to prevent accidents from carelessness or otherwise, the platforms should fit the compartments neatly, so that the men could not even by thoughtlessness endanger life or limb. In the construction of such means of vertical conveyance, in pits of great depth, iron or steel bands, links, or ropes could be judiciously made use of, connected on top by square links over a toothed wheel, making alternate reverse revolutions.—The methods of sinking pits have been considerably improved within a few years, by the use of new mechanical contrivances, or inventions in boring, blasting, and contending with water, quicksands, clays, or hard materials. In blasting, the use of dualline is preferred by miners to other new explosive compounds, on account of its superior safety and effectiveness; while electricity is now generally used by experienced engineers both in sinking and tunnelling. It is not used, nor is it desirable, in ordinary coal or iron mining for the discharge of single blasts; but where the simultaneous discharge of numerous blasts is required, nothing but electricity is available. In the sinking of two deep vertical shafts by the Philadelphia and Reading coal and iron company 1½ m. N. of Pottsville, a novel method was adopted, which promises to produce a revolution in that branch of mine engineering. The mammoth coal bed in that locality lies at a great depth below the surface, estimated to be 1,560 ft., and as the mining law of the state requires at least two openings separated by not less than 150 ft. of solid strata, two shafts were necessary. The plan adopted was

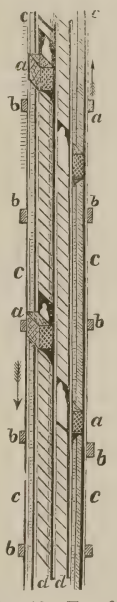


FIG. 16.—Travelling Rods.
a, basket platforms; *b*, *c*, partitions and supports; *d*, rods.

to sink the shafts as usual down to the solid rock, and then by means of a number of diamond drills, each driven by its own machinery, to bore a series of holes about 300 ft. deep. The bit used is concave, with circular grooves and cylindrical holes for the outlet and circulation of water, which is forced down through the centre of the boring rods, made of gas pipe $1\frac{1}{2}$ in. in diameter, and the holes when drilled are $1\frac{3}{4}$ in. The water takes up the fine sand or pulverized rock, carries it away from under the bit, and rises outside of the rods or pipe to the surface. In the W. shaft, which is 25 ft. 8 in. long by 13 ft. 10 in. wide, 35 holes are bored in five rows of seven holes in each, the outside rows being along the sides and in the corners, making the holes 4 ft. 3 in. one way and 3 ft. 6 in. the other from centre to centre. As soon as one of the holes has been bored to the required depth the machine is moved to the next, and the operation is continued until all the holes in the shaft are drilled. Two or three machines can work at the same time on the same bed plate. No cores are removed, all the rock being ground to powder and carried off by the water, and it is therefore not found necessary to take out the rods very often. Steam may be used as the power to drive the boring machines, but in the lower levels compressed air is obviously much better. When all the holes are bored to a depth of 250 or 300 ft. the machines, pumps, &c., are taken to the other shaft to bore the holes there. During the boring in the second shaft the rock is blasted and removed in the first, which requires much more time than the drilling. On the completion of the holes they are filled to the top with sand, and the work of blasting and removing the rock is done by removing the sand by means of a sand pump from all the holes, except those along the sides and in the corners, to a depth of from 3 to 4 ft. Clay is then forced into each hole so as to made a plug 6 in. to a foot long, and on top of this a cartridge of dualline is placed and the holes are then tamped with clay. The cartridges are connected together by wires leading to a galvanic battery, and are all fired at once. The loosened rock is removed, and the remainder of the holes are then charged and fired in the same way, but only those on one side at a time. When all the holes have been fired, the miner begins again by taking out more sand, and the work goes on until the depth to which the holes have been bored is reached. The drilling machines are then brought from the other shaft, and the holes are again bored from 250 to 300 ft. deeper. No difficulty is found even at a depth of over 1,000 ft. in maintaining a rate of speed in sinking of from 50 to 60 ft. a month, which is 50 per cent. greater speed than has been attained in hand drilling through similar rock in shafts of equal sectional area, which in these shafts is 224 and 364 sq. ft. The greatest depth blasted in one month was 112 ft., and 125 ft. of the shaft was timbered in the same month. The cost per foot is about the same as by hand drilling, but the great advantage of this system is the saving of time, which is a consideration of immense importance in an operation involving the outlay of so much money. By the old system, as only a few men could work at a time in so small a space, the sinking of the shaft was very slow, the large capital invested was unproductive, and the profits to be derived from the mine in active operation were lost.—When it is necessary to put in metal casing or tubing to dam back water, quicksands, or decomposing fire clays, such as are met with in some of the bituminous coal fields at great depths below the surface, the usual method is employed. The casing is taken down the pit in sections and bolted together to form the tube at the bottom; and this may be done below or above the shield. When the surface water has been properly stopped and all the heavy springs dammed back as they are met, the water will not be difficult to manage with buckets, even when great springs or underground watercourses are met with. But when the accumulation of many streams descends to the bottom of the shaft, any great feeder of water might overcome both buckets and pumps. The purpose of such walling, cementing, and tubing is to avoid the use of pumps either during sinking or permanently, because the water can be drained more effectively. This method of damming back the water has not been used in the anthracite mines of Pennsylvania, and rarely if ever in any American pits, most of which are square or oblong, and both sinking and permanent drainage are effected by pumps, at great and constant cost. The best pump for sinking is that known as the Cornish bucket pump, with the column pipe larger than the working barrel, so that both the buckets and the clack valve may be drawn to the surface through the pipes, if necessary for repairs, in case of accident. The pump rods must work inside of the pipes in this plan. This pump may be greatly improved for ordinary permanent lifts by reversing the above order and providing a working barrel of double the capacity of the pipes, and combining the plunger and bucket principle in the working barrel. Thus the down stroke forces one half the water from the barrel, and the up stroke draws the remainder. This is the cheapest, simplest, and most effective style of pump for all purposes, worked from the surface. But most of the large collieries of the world are now drained by the common Cornish plunger or force pump, the principle of which is well known. Some of these are operated by complicated machinery, but the best are those in which the pump rods are connected directly with the steam piston of the engine, without additional gearing. These are used to force water 500 ft. high, but 200 to 250 ft. vertical height is far more economical and safe. Mining pumps of a new and far more effective style have been

introduced during the last 10 or 15 years. They are direct-acting force pumps, but instead of being connected with the engine by rods, the steam is carried in pipes to the bottom of the mine, where both steam cylinder and pump are connected by a very simple arrangement, as a single piece of machinery. The Allison and Bannan pump is generally used where pumps of this class are employed in anthracite mines, while the Cameron pump is used in England and this country for the same purposes. One of these has recently been placed in the mines at Bishop Auckland, England, with a steam cylinder of 26 in. and a pump barrel of 6 in. diameter, with 6 ft. stroke to each. This pump throws a steady stream of 120 gallons per minute up a vertical height of 1,040 ft. in a single lift, under a water pressure of 700 lbs. per square inch. At the close of 1870, 130 of these pumps were at work in the mines near Newcastle and Durham, England.—The raising of coal from deep mines is now almost exclusively done by cages, on the principle of the elevators used in hotels. These cages are moved with the speed of a railroad train. They are provided with "shoes," or projecting guide slots or holes, which move on or in guides of wood,

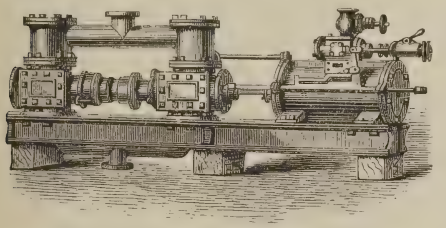


Fig. 18.—Underground Mining Pump.

iron, or rope, extending from the top to the bottom of the pit. These cages are in one or two stories, and carry one or two mine cars on each story. They are provided with rails corresponding to the track both at the bottom and top of the pit. The time occupied in shifting the cars and hoisting through 2,400 ft., in the Rosebridge pits, near Wigan in England, is less than one minute. When the water is properly dammed back there is generally very little in deep pits; and when the mines are dry and dusty, as they very generally are, there is scarcely enough water to moisten the air and allay the dust, if properly distributed over the mines, which however is rarely done. But when the water is in excess, and not very abundant, a tank may be placed beneath the cage, which dips into the water and fills through self-acting valves at the bottom of the pit, and discharges by automatic arrangement at the top. This is simple, cheaper, and better than pumps in very deep mines, when the water is not excessive; but when it is abundant, the pump is the most available. The cages are now generally raised by means of two engines or steam cylinders connected directly, without spur gearing, to the cranks of the drum on which the rope is wound. The engines are connected with link motion, so that one is on the "live centre" or half stroke while the other is on the "dead centre" or full stroke, and are reversed at each ascent and descent of the cages, of which there are always two, one descending while the other is ascending. Round wire or steel ropes are generally used; but there can be no doubt that flat steel ropes are the best for deep pits. These should be made of uniform steel, and composed of several round ropes combined, or served together with steel wire, and very carefully stretched and adjusted before they are put to work. Flat ropes work on or in grooved drums, and lap on themselves. Thus at starting, when the strain on the engines is the hardest, the diameter of the drum is the smallest, and much in favor of the lift; while the descending car and cage, which act as counter-balance, are on the larger diameter of the drum, because on this side the rope has lapped on itself and increased the diameter say two inches at each revolution, so that if the drum or groove was 10 ft. in diameter at starting the cage from the bottom, and the pit 2,000 ft. deep, its diameter would be about 20 ft. when the cage arrived on the top. Another very desirable method of elevating coal or water is the "pneumatic lift," now in general use to supply the new material to the top of blast furnaces, and in a few cases to elevate coal in pits. For very deep pits this seems to be an admirable method, and where a pair of circular pits are used, with brick and cast-iron lining, it is the most economical method, both in regard to first cost and permanent operation. The plan is very simple, but difficult to explain without elaborate engravings. The elevation may be effected by means of suction or compression of the air, as now practised in the pneumatic despatch tubes. This mode of elevating coal or water may be extended to any practicable depth, or perhaps as deep as the English or French and Belgian coal basins descend below the sea level, without complicated machinery, and with perfect safety; while the power employed to raise the material supplies the ventilation, because the entire area of the pits can be used to supply air under pressure or vacuum. Thus compressed air may be used for all underground purposes, except the mere handling and breaking down of the coal, as machinery is successfully used for "undermining," which is the most laborious and costly item in mining bituminous coal; while in anthracite mines drilling holes for blasting is the most laborious part, and this also can be done more effectively and cheaply by machinery. (See Mine.)—The increase of temperature is the only great apparent obstacle to increased depth of pits. According to English experience, the temperature rises 1 degree for every 60 ft. of depth. It appears that the old Kuttenberger pit, in Bohemia, was abandoned at 3,778 ft. on account of the high temperature at that depth:

but this pit was sunk before the invention of gunpowder, when blasting was performed with lime, or the rocks were cut with picks and gads or "feather and wedges," and when mining science had made little progress and the best methods of ventilation were not understood. A Belgian coal pit has been sunk 3,411 ft., and one of the largest English collieries is in successful operation at 2,445 ft. The dangers, diseases, and hardships of the collier's life are not the result of deep mining, but of the rude and barbarous character of the mines, and the system of working. Even at the present day nine tenths of the mines of the world, whether of coal or of metals, are not only dangerously imperfect, but unworthy the scientific attainments of the age. In mines which are provided with proper means of ingress and egress, and are well ventilated and drained, the collier's employment is not remarkably dangerous or unhealthy; but this is the exception and the reverse is the rule. The following table of comparisons shows the relative economy of production, and the ratio of danger between the different systems of mining during a period of three years ending 1869:

DISTRICTS.	SYSTEM OF MINING.	No. of tons raised per death from explosions by gas.	No. of deaths from explosions of gas.	No. of deaths in three years.	No. of tons of coal raised per death from underground accidents.	No. of tons raised per death from all causes.	Ratio of safety from explosions of gas.	Ratio of safety from underground accidents.	Tons of coal per capita per annum.
1. Northumberland, Durham, and Cumberland, England	Bord and pillar	4,738,471	7	249	352,863	133,310	100·00	67·98	387
2. South Durham	Bord and pillar	1,522,400	30	279	519,000	163,698	32·12	100·00	387
3. Manchester	Longwall	574,194	36	218	234,897	94,821	12·11	45·25	271
4. Yorkshire	Mixed, chiefly post and stall	78,180	371	595	273,632	48,746	1·65	52·72	262
5. West Lancashire and North Wales	Mixed	124,739	192	521	157,565	45,969	2·68	30·36	237
6. Midland District	Longwall	1,908,250	12	182	305,370	125,818	40·27	58·82	275
7. N. Staffordshire (Potteries)	Bord and pillar	104,166	168	316	265,150	55,379	2·19	51·08	233
8. S. Staffordshire (special for 30 ft. coal)	Longwall	870,514	35	324	179,274	94,037	18·58	34·53	353
9. Southwestern district, including Coalbrookdale	Mixed	1,438,461	13	213	154,545	87,793	30·35	29·77	238
10. South Wales	Post and stalls	135,988	202	533	166,477	51,536	2·86	32·07	310
11. East Scotland	Longwall & bord & pillar	1,320,791	17	135	380,567	166,321	27·87	73·72	291
12. West Scotland	Longwall & bord & pillar	2,302,136	8	120	259,395	153,475	48·58	49·98	285
13. Schuylkill Regions, Pa. (one year, 1871)	Breast and pillar	200,000	25	101	55,000	50,000	5·00	10·00	250

The production of coal in Great Britain during 1871 was 117,439,251 tons, by 370,881 men and boys. In producing this large amount there were 826 accidents and 1,075 deaths; and 109,246 tons of coal were raised for each death, and one life lost to every 345 persons employed.

TABLE OF ACCIDENTS AND DEATHS IN THE BRITISH MINES FOR TWO YEARS.

CAUSE.	ACCIDENTS.		DEATHS.	
	1870.	1871.	1870.	1871.
Explosions of gas	56	52	185	269
Falls of coal, rock, &c.	402	426	411	435
Ascending and descending pits	37	39	47	41
Accidents about pits	81	79	82	82
Miscellaneous underground accidents, explosions of powder, &c.	174	161	186	176
Miscellaneous surface accidents	80	69	80	72
Total	830	826	991	1,075

In the anthracite mines of Pennsylvania the number of deaths from all kinds of mining accidents during 1871 was 274, and the number of tons of coal mined per death 64,500. There were 52,227 men and boys employed in and about the mines, and one life was lost for every 190 employed. This great excess of fatality in the Pennsylvania anthracite regions is partly owing to the large size of the coal beds; but the chief defect is in the bad system of mining, and recklessness in regard to life. In South Wales (No. 10 of the preceding table) similar methods are employed and similar results observed, though the coal beds are not much if any larger than those of the Newcastle district (No. 1), and not as thick as the coal beds of Scotland (Nos. 11 and 12). Where the longwall and bord and pillar systems of mining are used, the best results are obtained; and where the post and stall and breast and pillar methods are in use, the worst results follow; though in the Staffordshire districts, where iron ores and fire clays or the thick coals are mined, the dangers are greatly increased, whatever system is used. There are no data for comparing the mining casualties of the present with those of the past, in proportion to the number of employees or the annual production; but it is gratifying to observe that the ratio of deaths and accidents is constantly diminishing at the collieries of the great producing districts, notwithstanding that the mines are constantly becoming deeper. Moreover, the many causes of disease incident to the older mining communities, resulting from defective ventilation and the poisonous vapors of the mines, carbonic acid (black damp), carbonic oxide (sweet or white damp), sulphurous acid (powder, smoke, &c.), soot, dust, and a general deficiency of pure air, are gradually disappearing.—The pay of colliers differs so greatly that it is not possible to give any regular price. In the anthracite regions laborers in 1871 were

paid from $9 to $11 a week, and miners from $12 to $15; but most of the latter work by contract, and earn from $15 to $20 a week, and sometimes $100 a month, and the cost of coal then ready for market, exclusive of royalty, is about $2 a ton; but the wages have been as low as $4 50 a week for laborers and $6 for miners, and the cost of coal less than $1 a ton. At the English mines, miners' wages are even now much lower than at American mines, though nearly double the rates of ten years ago. The average cost of Newcastle coal during 20 years, on top of the pit, was 2*s.* 8½*d.*, and on board at Newcastle, 5*s.* 6*d.*, made up as follows: rent or royalty, 6*d.*; delivered in cars, 2*s.* 8½*d.*; freight, 1*s.* 6*d.*; interest, 10*d.* In Yorkshire, Staffordshire, Lancashire, Scotland, and Wales the average cost of bituminous coal was 5*s.* 8*d.* during 1845, but during 1871 twice as much. During 1850 the number of the employees, men, boys, women, and girls, in the Belgian mines, and their wages, were as follows:

EMPLOYEES.	No. below ground.	No. above ground.	Wages in frs. above ground.	Wages in frs. below ground.
Men	28,471	7,531	1·70	1·74
Boys	4,464	1,075	0·65	0·94
Women	2,274	1,771	·92	1·30
Girls	1,221	1,142	·56	·85

The great advance in the price of coal in England during 1871, 1872, and 1873 is largely due to the greater demand for both coal and iron, and the decrease in the hours of labor and increase of the wages of miners. The increase of collieries, and the use of machinery in mining coal, will without doubt eventually reduce the price of coal even below its former rate, without reducing the prices of labor to the mere pittance formerly paid in England, and still paid in France and Belgium, for underground work.

COLLIN, a N. E. county of Texas, watered by the E. fork of Trinity river and its tributaries; area, 870 sq. m.; pop. in 1870, 14,013, of whom 1,653 were colored. About two thirds of the county is prairie, the rest timbered. Farming and stock raising are about equally pursued. The chief productions in 1870 were 42,827 bushels of wheat, 674,565 of Indian corn, 123,325 of oats, 32,159 of sweet potatoes, 204,915 lbs. of butter, and 4,371 bales of cotton. There were 10,668 horses, 1,582 mules and asses, 5,065 milch cows, 15,360 other cattle, 4,812 sheep, and 15,550 swine. Capital, McKinney.

COLLIN. See Kolin.

COLLINGWOOD, a town of Simcoe co., Ontario, Canada, on the S. shore of Georgian bay, 72 m. N. W. of Toronto; pop. in 1871, 2,829. It derives its importance from being the northern terminus of the Northern railway, whence steamers connect with the N. shore and with ports on Lake Superior. Two lines of steamers ply between here and Lake Superior.

COLLINGWOOD, a suburb of Melbourne, Australia, situated on low ground between that city and the Yarra Yarra to the northeast; pop. about 19,000. It is almost a town of itself, having a council chamber, banks, numerous churches and public buildings, and many manufactories.

COLLINGWOOD, Cuthbert, lord, an English admiral, son of a merchant of Newcastle-on-Tyne, born there, Sept. 26, 1750, died March 7, 1810. He went to sea at the age of 11, as midshipman under Capt. Brathwaite. After some years afloat he made a cruise under Admiral Roddam, and thence was transferred to Graves's fleet acting against the Americans, reaching Boston in 1774. On the day of the battle of Bunker hill he was appointed fourth lieutenant of the Somerset, and placed in charge of a party of marines who kept open communication between the troops and the ships. Next year he was given command of the sloop Hornet, with which he went to Jamaica, where he renewed acquaintance with Horatio Nelson, then lieutenant of the Lowestoffe, whom he had known in boyhood. The career of these eminent men was closely united during the rest of their lives. In 1780 Nelson, being in command of the Hinchinbroke, was ordered to conduct a boat expedition to the Pacific along the San Juan river and Lakes Nicaragua and Leon. He was prostrated by fever and sent home, and Collingwood took his place. His robust constitution carried him through, but he buried 180 of his 200 men. The expedition was found impracticable. In the succeeding year he was wrecked in the Pelican, 24 guns, on Morant keys, West Indies. Thereafter he was transferred to the Samson, 74, in which he served till the peace, and in 1783 was sent with the frigate Mediator to reënforce the squadron employed in preventing the Americans from trading with the West India islands. On his release from that duty in 1786, he revisited his home at Newcastle, after an absence of 25 years. On the breaking out of the war with the French, he served on board the Barfleur, which bore a conspicuous part in Lord Howe's victory, June 1, 1794. In 1797 he was placed in command of the Excellent, 74, which he fought with effect in Jervis's victory off Cape St. Vincent, Feb. 14. When Nelson heard that the Excellent was coming to reënforce him, he exclaimed: "That counts two!" In 1799 he was made rear admiral of the white; in 1801, admiral of the red; and in 1804, of the blue. He was detailed in 1803 to watch the French fleet off Brest, which he did for nearly two years. His crowning achievement was at Trafalgar, Oct. 21, 1805, where he was second in command, and when Nelson fell took the chief command and finished the day. For this service he received the thanks of parliament, with a peerage, and a pension for his family of £2,000. His subsequent career was a succession of semi-political missions to the Mediterranean, which taxed his endurance and skill

to the utmost. He repeatedly requested leave to retire, but the government informed him that they could not spare his services. Worn out at length, he died at sea while cruising off Minorca. His remains were brought home and deposited in St. Paul's cathedral, near Nelson's. Selections from his despatches and correspondence were published at London in 1828, by G. L. N. Collingwood.

COLLINS, Anthony, an English philosophical and skeptical writer, born at Heston, Middlesex, June 21, 1676, died in London, Dec. 13, 1729. He was educated at Eton and at King's college, Cambridge, and was afterward entered a student in the Temple at London, but applied himself chiefly to literary studies. In 1703 he began a correspondence with Locke, who cherished an enthusiastic affection for him, admiring in him "as much of the love of truth for truth's sake as ever he met with in anybody." In 1707 he published a treatise concerning the use of reason in propositions depending on human testimony, and in the same year engaged in the controversy between Dodwell and Dr. Samuel Clarke concerning the natural immortality of the soul. In 1709 he published "Priestcraft in Perfection," assailing the 20th article of the church of England, which affirms the power of the church to decree rites and ceremonies and to determine controversies of faith. Numerous answers were written to this work, the most noted of which was by Dr. Bennet, to which Collins replied in his "Essay on the Thirty-nine Articles." He advocated the necessitarian scheme in his "Vindication of the Divine Attributes" (1710), which views he developed more fully in his "Philosophical Inquiry concerning Liberty and Necessity" (1715). Though he endeavors to prove that man is a necessary agent morally as a clock is physically, he yet does not deny the power in man of doing as he wills and pleases; and in several of his views he anticipated Jonathan Edwards, the ablest subsequent champion of necessity. In answer to his opinions Dr. Clarke published in a tract one of the most important of his metaphysical arguments. In 1711 Collins resided in Holland, where in the society of Le Clerc and others he matured his "Discourse on Free Thinking," which was published on his return in 1713, and excited much animadversion. Its aim was to show that in all ages the most intellectual men and most admirable characters have been free thinkers, relying rather on philosophical thought than established opinion. The most remarkable of the numerous answers to it were by Bentley in England and Crousaz in France. In 1718 he became treasurer of the county of Essex, and soon after published his "Grounds and Reasons of the Christian Religion," maintaining that though Christianity is founded upon Judaism, and the assertions of the New Testament are proved in part by propositions from the Old, yet there is nothing in the latter which has a direct or other than a typical or allegorical bearing upon anything in the former. Within two years 35 answers appeared to this work, among others, by Whiston and Drs. Clarke, Sykes, and Sherlock; to which Collins replied finally in his "Scheme of Literal Prophecy." His last work was written in 1727, in reply to eight sermons by Dr. Rogers on the necessity of a divine revelation. Collins was a subtle and ingenious rather than a profound writer. His personal amiability was remarked even by his opponents, and his large and very curious library was open to all men of letters.

COLLINS, Charles Allston, an English painter and author, brother of Wilkie Collins, born at Hampstead, Jan. 25, 1828, died in London, April 9, 1873. From 1848 to 1858 he was engaged in painting, and exhibited several pictures at the royal academy and elsewhere, which attracted attention. Afterward he devoted himself to literature. Among his works are: "A Cruise upon Wheels" (1862), a humorous account of a journey in France; "Strathcairn" (1864); and "At the Bar" (1866). He married a daughter of Charles Dickens.

COLLINS, Isaac, an American printer and publisher, born in Delaware, Feb. 16, 1746, died at Burlington, N. J., March 21, 1817. His father emigrated to the United States from Bristol, England. Collins served an apprenticeship to the printing business, and at its completion went to Philadelphia, where he worked 18 months as a journeyman, and then went into partnership with Joseph Cruikshanks. In 1770 he removed to Burlington, having been chosen colonial printer to George III. Here he married and became the father of 14 children. In 1771 he commenced printing an almanac, and continued it for 20 years. He was also at this time the publisher of several other works. Removing to Trenton, N. J., in 1778, he projected what was in the publishing business of that time a great enterprise, namely, the publication of an octavo family Bible. In order to secure the utmost accuracy in typography, the whole was subjected to 11 proof-readings, the last of which was by his daughter Rebecca. So free from errors was this edition of the Scriptures, that it became at once the standard for all critical appeal, when the English translation alone was concerned.

COLLINS, William, an English poet, born at Chichester, Dec. 25, 1720, died there, June 12, 1756. He was destined for the church, and in 1733 was admitted a scholar at Winchester. In 1740 he stood first in the list of scholars to be entered at New college, Oxford, but no vacancy occurred, and this circumstance Dr. Johnson calls the original misfortune of his life. He became a commoner of Queen's college, whence he was transferred to Magdalen. While at Winchester school he had written his "Eclogues," which he printed in 1742. They appeared without his name, and attracted little notice. He took his bachelor's degree at Oxford in 1744, and soon left the university abruptly, repairing to London as a literary ad-

venturer. Having no fixed purpose, little perseverance, and withal great impatience for distinction, he was for several years engaged in drawing up proposals for works which were never written, and destroying what little he wrote. He was much annoyed also by duns, and was at one time in the hands of bailiffs. He borrowed some money from a bookseller as an advance on a projected translation of Aristotle's Poetics; but having inherited about £2,000 from his uncle, Col. Martin, he repaid the publisher and thought no more of the translation. In 1746 he published his odes. He was much disappointed in the reception of his productions, and died probably with little idea of the celebrity they were to attain. The latter part of his life was passed in a state of insanity, with only occasional lucid periods, and for some time he was confined in a lunatic asylum.

COLLINS, William, an English painter, born in London, Sept. 18, 1787, died Feb. 17, 1847. His earliest ideas in painting were derived from watching the process by which Morland executed his animal pieces. In 1807 he studied at the royal academy, and from that time until his death, with the exception of two years spent in Italy, never omitted to send pictures to the annual exhibitions. In 1820 he was elected an academician. In 1836 he went to Italy, and on his return made an unsuccessful appearance at the academy exhibitions as a historical painter. Many of his pictures have been engraved, as "Prawn Fishers at Hastings," "Happy as a King," the "Shrimpers—Evening," the "Fisherman's Widow," &c.

COLLINS, William Wilkie, an English novelist, son of the preceding, born in London in January, 1824. After being educated at a private school, and spending two years with his parents in Italy, he was articled for four years to a firm in the tea trade. Exchanging commerce for law, he was a student in Lincoln's Inn at the time of his father's death; and his first literary performance was an admirable biography of him, with selections from his journals and correspondence (1848). He devoted himself from this time entirely to literature, and published successively, between 1850 and 1854, "Antonina, or the Fall of Rome," "Rambles beyond Railways, or Notes in Cornwall," "Basil," "Mr. Wray's Cash Box," and "Hide and Seek." He soon after became a contributor to "Household Words." All his later novels originally appeared as serials in periodicals. The principal of them are: "After Dark" (1856), "The Dead Secret" (1857), "The Queen of Hearts" (1859), "The Woman in White" (1860), "No Name" (1862), "Armadale" (1866), "The Moonstone" (1868), "Man and Wife" (1870), "Poor Miss Finch" (1872), and "The New Magdalen" (1873). In 1863 appeared "My Miscellanies" (2 vols.), made up of contributions to journals. He has also written three dramas, "The Frozen Deep," "The Lighthouse," and "Black and White." At the end of 1873 he visited the United States, where he gave public readings from his works in the principal cities.

COLLINSON, Peter, an English botanist, born at Hugall Hall, Westmoreland, Jan. 14, 1693, died Aug. 11, 1768. He was a member of the society of Friends, and a merchant in London. His studies in natural history gained him the acquaintance and correspondence of the most eminent naturalists of his time. He corresponded with Cadwallader Colden and Franklin, and is said to have made known to the latter (1743) the first experiments in electricity, and sent to him the first electrical machine that went to the colonies. He gave special attention to botany, and to the naturalization of plants and trees in regions remote from their original habitats. He sent to Maryland, Pennsylvania, and other Atlantic colonies, many foreign ornamental shrubs, which found in America a congenial soil and climate; and he introduced into England many American forest trees. He was one of the first to suggest the culture of the grape in Virginia. A genus of labiate plants is named *Collinsonia* after him. He was also familiar with the antiquities of England, and read many interesting papers before the society of antiquaries.

CÖLLN, Georg Friedrich Wilibald Ferdinand von, a German author, born at Oerlinghausen, Lippe-Detmold, in 1766, died in Berlin, Jan. 13, 1820. He held various offices in different places, and was for a time editor of the *Staats-Anzeiger* in Berlin, but in 1808 was imprisoned in the fortress of Glatz on account of damaging disclosures of maladministration made in some of his books. In 1810 he was permitted to visit a watering place, whereupon he fled to Austria. The king of Prussia subsequently pardoned him, and he was even pensioned and employed in the public service. His works were chiefly anonymous. Among them are: *Neue Feuerbrände* (6 vols., Leipsic, 1807–'8); *Wien und Berlin in Parallele* (5 vols., 1808); *Vertraute Briefe über die innern Verhältnisse am preussischen Hofe* (3 vols., Amsterdam and Cologne, 1807–'9); *Die neue Staatswissenschaft* (2d ed., Berlin, 1816); and *Historisches Archiv der preussischen Provinzialverfassungen* (1819–'20).

COLLODION, or **Collodium** (Gr. κόλλα, glue, and εἶδος, form), an adhesive substance produced by dissolving gun cotton in ether and alcohol. The proportions recommended are, prepared cotton 8 parts by weight, rectified ether 125 parts, and rectified alcohol 8 parts. The presence of water in the alcohol and ether should be carefully avoided. The cotton is to be agitated in a bottle with the ether a few minutes, when the alcohol may be added, and the shaking continued. The product, a clear, colorless liquid, of the consistency of sirup, is next strained through a cloth, and the liquid kept in a tight bottle. It is very volatile, and on evaporating leaves a film which adheres with extraordinary tenacity to the surface of bodies. This property makes it a convenient

application to cuts and wounds in the place of sticking plaster, either by brushing it alone over the edges of the incision, or by spreading it upon strips of linen. It was first applied to this use by Dr. J. Parker Maynard, of Boston, to whom the name was suggested in 1848 by Dr. A. A. Gould. Collodion is best prepared from gun cotton made by the process of Prof. Ellet. Gun cotton made by steeping the fibre in nitric acid does not always dissolve in ether and alcohol. Prof. Ellet's, being always soluble, is preferred for this purpose, prepared as follows: 8½ fluid oz. of sulphuric acid are added to 10 oz. of nitrate of potassa, mixed, and triturated in a mortar; ½ oz. of fine clean cotton is then thoroughly stirred into the mixture for about four minutes; the free acid is next removed by washing in water till all traces of it disappear. The gun cotton, being opened by picking and dried at a gentle heat, is dissolved in 2½ pints of ether already mixed with a fluid ounce of alcohol. The solution is to be strained, and kept in closely stopped bottles previously well dried. A similar method is given by Lauras, and the cotton, which he calls *xyloidin*, produces by his process a quality of collodion possessing elasticity and suppleness, which adapt it for application to the skin, especially on the articulations where freedom of motion is an important object. To a mixture of 300 grms. of sulphuric acid of sp. gr. 1·847, and 200 grms. of dry nitrate of potassa, he adds 10 grms. of carded cotton. After being in contact 12 minutes the cotton is taken out and washed with cold water, rinsing it two or three times. It is then immersed in a solution of 30 grms. of carbonate of potassa to 100 of water, again well washed with water, and dried at 77° to 86° F. Of this xyloidin 8 grms. are placed in a flask with 125 of ordinary ether, and 8 grms. of alcohol are added of sp. gr. ·825. The mixture is well agitated and then combined with a preparation of Venice turpentine 2 grms., castor oil 2 grms., and white wax 2 grms., to which, after being heated, 6 grms. of ether should be added.—Collodion was first applied to photographic purposes in 1847, by Mr. Archer of England. It is used as a menstruum for affixing to a glass plate a film of some iodide, as of potassium, ammonia, or cadmium, a solution of which is mixed with it.—Collodion is used in medicine exclusively as an external application. Besides its use as an adhesive application to slight cuts and wounds, already referred to, it is often applied with decided advantage to sore and cracked nipples and to chapped hands, and used as a protection in some diseases of the skin, especially in chronic erythema, intertrigo, and herpes labialis. Whenever there is acute inflammation of any surface, the contractile action of collodion is apt to produce pain and irritation, and it should not then be used. The annoying bleeding which sometimes follows the cut of a razor while shaving may be instantly stopped by an application of collodion. A mixture of 100 parts of collodion with 2 parts of glycerine makes a more agreeable application than collodion alone, and one equally efficacious. It forms with cantharides a convenient blistering agent. Collodion should be applied with a camel's hair pencil. It may be kept for a long time fit for use in a well stoppered bottle.

COLLOMBET, François Zénon, a French author, born at Siéges, in the department of Jura, March 28, 1808, died in Lyons, Oct. 16, 1853. He studied theology in accordance with the wishes of an uncle, but having inherited some property he turned to literature. He resided at Lyons, where he occupied a single room for 23 years. He wrote for Feller's *Dictionnaire historique*, the *Biographie universelle*, and the *Revue du Lyonnais*. In 1848 he received from the academy of Lyons a prize for an *Éloge de Chateaubriand*. He died from overwork, leaving 40 volumes of writings, including *Cours de littérature profane et sacrée* (4 vols. 8vo); *Histoire de Saint Jérôme* (2 vols., 1844); *Histoire critique de la suppression des Jésuites* (2 vols., 1846); and *Histoire de la Sainte Église de Vienne* (3 vols.).

COLLOREDO, a noble family of Austria, represented also in Italy, a branch of the house of Wallsee or Waldsee, which held the vice-comitat of Mels in 1031, and was divided at the death of During II. in the 13th century into three lines: Mels-Colloredo, Prodolone, and Venzone. The earliest direct ancestor of the house was probably Wilhelm, who built in 1302 the castle of Colloredo in Friuli, near the village of Mels. His three surviving sons, Asquin, Bernhard, and Weickardt, became the founders of three separate branches.—To the Asquin line belong the following prominent names: Rudolph von Colloredo, born Nov. 2, 1585, distinguished himself in the thirty years' war, and especially at the defence of Prague in 1648, as field marshal of the imperial army, and died Jan. 24, 1657. Hieronymus, his brother, born in 1582, served as cavalry general during the same war, and fell in the battle of St. Omer in 1638. The last of this line was Ludwig, son of the last named, who died Dec. 28, 1693, with the rank of feldzeugmeister.—In the Bernhard line the following distinguished themselves: Johann Baptist von Colloredo-Wallsee in 1648 took command of the Venetian forces in Candia against the Turks, and fell during the siege in October, 1649. Franz de Paula, count of Colloredo, born Oct. 29, 1799, was attached to the English legation in 1820, was minister at Copenhagen in 1825, at Dresden in 1830, at Munich in 1836, at St. Petersburg in 1843, again at London in 1852, and subsequently ambassador in Rome; and in 1859, after the preliminaries of Villafranca, he was appointed first plenipotentiary of Austria to negotiate the terms of peace at Zürich, where he suddenly died, Oct. 26, 1859, leaving no issue.—The Weickardt line produced the following prominent men: Fabrizio, a Florentine statesman, born in 1576, was sent as am-

bassador to the emperor Rudolph II. by Cosmo II. de' Medici, whose successor, Ferdinand II., appointed him chief minister of state. He died in 1645. The story of his journey to the Austrian court was written in Latin by Daniel Eremita, and forms an interesting work on the manners of that age. HIERONYMUS, count of Colloredo, born in 1674, was governor of Moravia from 1714 to 1717, was appointed chief marshal of the Austrian court in 1725, and died in 1726. Count RUDOLPH JOSEPH, his son, born July 6, 1706, was for 50 years vice chancellor of the German empire, and died Nov. 1, 1788. His son, JOSEPH MARIA, count of Colloredo-Mels and Waldsee, born Sept. 11, 1735, distinguished himself in the seven years' war, was appointed lieutenant field marshal and councillor of war, and accompanied the emperor Joseph II. to France. On his return to Austria he was intrusted with the general direction of the artillery, and soon after he was made feldzeugmeister. He participated in the Turkish war, and was made field marshal and commander-in-chief of the army of observation on the Prussian frontier. From 1805 to 1809 he was minister of state and conference, and director of the council of war. He died Nov. 26, 1818. Count WENZEL JOSEPH VON COLLOREDO, born Oct. 15, 1738, brother of the preceding, participated in the seven years' war, was made lieutenant field marshal in 1784, feldzeugmeister during the Turkish war, and field marshal in 1808. He died Sept. 4, 1822.—COLLOREDO-MANSFELD has been since 1771 the name of the princely branch of the house, forming a part of the Weickardt line, of which the following are to be noted: FRANZ DE PAULA GUNDACCAR, prince of Colloredo-Mansfeld, born May 28, 1731, married the countess of Mansfeld, and added her name to his own. He was ambassador at Madrid from 1767 to 1771, and vice chancellor of the German empire from 1789 to 1806. He died Oct. 7, 1807. FERDINAND, count of Colloredo-Mansfeld, born in Vienna, July 30, 1777, was in 1801 ambassador at Ratisbon, in 1803 at Naples, and in 1806 at Palermo. He fought valiantly in the battles of Aspern and Wagram in 1809, and rendered valuable assistance in the organization of the landwehr. He retired to his estates in 1815, whence he issued during the revolution of 1848 to take command of the academical legion. He died in the same year. HIERONYMUS, count of Colloredo-Mansfeld, born in 1775, took part in nearly all the campaigns of his time, and distinguished himself Aug. 30, 1813, in the battle at Culm, where Russia and Austria have jointly erected a monument to his memory. At the battle of Leipsic, having previously obtained the rank of feldzeugmeister, he took the chief command in place of the prince of Homburg, who had been wounded. He died in Vienna, July 23, 1822, from the effect of his wounds. FRANZ DE PAULA GUNDACCAR, prince of Colloredo-Mansfeld, son of the preceding, born in Vienna, Nov. 8, 1802, was rapidly promoted, and commanded in 1848 as major general in Trieste and Theresienstadt. He distinguished himself in the Hungarian war at Kápolna and Comorn, and obtained the chief command of an army corps. He died May 29, 1852. JOSEPH FRANZ HIERONYMUS, prince of Colloredo-Mansfeld, cousin and heir of the preceding, was born Feb. 26, 1813. He is a hereditary member of the upper house in the Austrian diet. His eldest son, Count HIERONYMUS, born July 20, 1842, took part in the Schleswig-Holstein war of 1864, and married in 1865 the countess of Festetics-Tolna.

COLLOT D'HERBOIS, Jean Marie, a French revolutionist, born in Paris about 1750, died in Cayenne, Jan. 8, 1796. His name was originally Collot, but having become an actor he adopted the additional name of d'Herbois. He appeared upon the stage for many years, and was the author of a large number of plays, some of which had considerable success. When the revolution broke out he joined the Jacobins at Paris, and acquired great influence by his sonorous voice, theatrical attitudes, and impulsive elocution. He was particularly energetic in his efforts to procure the release of a body of soldiers who had been imprisoned for having taken part in an insurrection at Nancy. After having been released they entered Paris in a grand procession, in which a conspicuous place was assigned to Collot. He also obtained the prize offered by the Jacobin club for the best almanac for 1792, which should make the advantages of constitutional government understood by the people. His work, called the *Almanach du père Gérard*, brought him great celebrity. He presided over an assembly held for the nomination of deputies to the convention, was himself elected a member, and in that capacity favored the most violent measures. He was chosen president of the convention, June 13, 1793, and in September of the same year he was placed with Billaud-Varennes upon the committee of public safety. In November Collot was sent with Fouché and Couthon to Lyons to punish the city for an insurrection. This was done by the slaughtering of the inhabitants *en masse* with grape shot, and the demolition of the buildings. When he returned to Paris he found that odium had been created against him by his proceedings at Lyons. His popularity was in some measure restored by an attempt to assassinate him, May 23, 1794. From a supporter of Robespierre he now, however, became his opponent; but the reaction proved too strong for him. He was removed from the committee of public safety, and, being found guilty of some of the charges brought against him, was transported to Cayenne.

COLLYER, Robert. See supplement.

COLMAN, Benjamin, an American clergyman, born in Boston, Oct. 19, 1673, died there, Aug. 29, 1747. In 1692 he graduated at Harvard college, and not long afterward began to preach. He embarked for England in 1695,

but the vessel in which he sailed was captured by a French privateer, and he was carried to France as a prisoner. Being exchanged soon after, he passed over to England, where he remained till 1699, preaching in different places. In that year, having accepted an invitation to become pastor of a society just formed in Brattle street, Boston, he returned to America and entered upon his new duties. Of this society he remained pastor until his death. In 1724 he was chosen president of Harvard college, which office he however declined, and in 1731 he received the degree of D. D. from the university of Glasgow. He published many sermons, some poems, and a tract in favor of inoculation for the smallpox.

COLMAN. I. George, the elder, an English comic dramatist, born in Florence about 1733, died at Paddington, Aug. 14, 1794. His father was British resident at the court of the grand duke of Tuscany. After receiving his early education at Westminster school, he became a student at Christchurch college, Oxford. He acquired a reputation for wit and talent, and published a weekly periodical called the "Connoisseur," from January, 1754, to September, 1756, which delineated the manners of the time with admirable humor. He studied law at Lincoln's Inn, and was admitted to the bar, but devoted himself to dramatic pursuits, writing "Polly Honeycomb" and "The Jealous Wife." At the death of his uncle, Lord Bath, he came into possession of a handsome fortune. In 1766 he joined with Garrick in writing "The Clandestine Marriage," and in 1767 he became part owner of Covent Garden theatre, and was acting manager of it for seven years. In 1777 he purchased the Haymarket theatre, which he supplied with pieces either original or translated. He was the author of more than 30 dramatic pieces, a few of which still keep possession of the stage. He was also a classical scholar, and made a translation of the comedies of Terence, and of Horace's "Art of Poetry." A paralytic stroke in 1790 resulted in his mental derangement, and he was removed to a lunatic asylum at Paddington. His "Dramatic Works" were published in 1777 (4 vols. 8vo), and his "Miscellaneous Works" in 1787 (3 vols. 12mo). **II. George,** the younger, son of the preceding, born Oct. 21, 1762, died Oct. 26, 1836. In 1785, in consequence of the illness of his father, he assumed the management of the Haymarket theatre, and retained it for a long time. In the latter part of his life he held the office of examiner of plays. He was distinguished as a wit, and divided with Sheridan the admiration of the London circles. He wrote "John Bull," "The Iron Chest," and "The Poor Gentleman," which still retain their popularity. He also wrote "Broad Grins," "Poetical Vagaries," &c., and various small poems.

COLMAN, Henry, an American clergyman and author, born in Boston, Sept. 12, 1785, died in London, Aug. 14, 1849. He graduated at Dartmouth college in 1805, and was ordained minister of a Congregational church at Hingham, Mass., in 1807, remaining there till 1820. From 1825 to 1831 he officiated as pastor of a Unitarian society in Salem, and afterward removed to Deerfield, where he devoted himself to agricultural pursuits. He was appointed agricultural commissioner of the state of Massachusetts, and after passing some time in making a tour of inspection in that state, and in preparing several reports, he spent six years, from 1842 to 1848, in Europe. The results of his observations during this time were published after his return in his "Agricultural and Rural Economy of France, Belgium, Holland, and Switzerland," "European Agriculture and Rural Economy," and "European Life and Manners, in Letters to Friends." He also published a report on silk culture and reports on the agriculture of Massachusetts. In 1849 he revisited Europe, for the benefit of his health, but died soon after his arrival in England.

COLMAR (under the Franks *Columbaria*), a city of Germany, capital of Upper Alsace, (formerly of the French department of Haut-Rhin), 40 m. S. S. W. of Strasburg; pop. in 1872, 23,045. It is situated near the foot of the Vosges mountains, on the Lauch and Fecht rivers, both tributaries of the Ill, a feeder of the Rhine, and on the railway from Strasburg to Basel. Colmar is one of the chief seats of cotton manufacture in Germany, and possesses also various other manufactures. The principal factory for cotton prints employs about 1,200 persons. It has normal schools for teachers, a gymnasium, a public library with 60,000 volumes, a Bible and a literary society, a civil and military hospital, a theatre, a Protestant church, several Catholic churches, and Jewish synagogues. The cathedral is a Gothic edifice of the 14th century, containing a remarkable painting of Martin Schön, who was a native of Colmar. Gen. Rapp was also born there, and a monument has been erected to his memory. Colmar was made a free imperial city in the 13th century, figured conspicuously in the civil wars under Rudolph of Hapsburg and Adolphus of Nassau, was taken by the Swedes in 1632, and later by the French, returned for a time to Germany, but was retaken by Louis XIV., and annexed to France in 1697 by the treaty of Ryswick. In 1871 it was ceded with the rest of Alsace to Germany.

COLNE, a market town of Lancashire, England, on the Colne, an affluent of the Calder, 26 m. N. of Manchester; pop. about 8,000. It is one of the most ancient seats of woollen manufacture in England; but since the introduction of the cotton manufacture, toward the close of last century, the population has been chiefly employed in producing cotton goods for the Manchester market.

COLOCOLO (*felis ferox*), a large cat of the size of the ocelot, living in the northern parts of South America. The color is grayish above, white below, with black longitudinal streaks

on the body and limbs, and the tail with partial black rings, the stripes edged with tawny. It is very savage, and commits great havoc among the monkeys and small mammals of



Colocolo.

Guiana. In its flat and wide head, large rounded ears, stout limbs, and short tail it somewhat resembles the African serval.

COLOCOTRONIS, Theodoros, a modern Greek general, born in Messenia, April 3, 1770, died in Athens, Feb. 4, 1843. His father and grandfather both fell fighting against the Turks, and Theodoros was habituated from his youth to the hardships of guerilla warfare. In 1806 he was compelled to fly from the Morea in order to escape the Turks, to whom his name had become a terror, and entered the military service of the Ionian Islands. Immediately on the outbreak of the revolution in 1821 he landed in the Morea, and was soon at the head of a large band of Greeks. In the two following years he was actively engaged in the operations against the Turks, distinguished himself especially at the taking of Tripolitza and Corinth, and contributed greatly to the victory over Mahmoud Dramali in 1822. But instead of bending all his energies toward the achievement of Grecian independence, he engaged in quarrels with his brother chiefs, and at last made open war upon the recognized government. He was unsuccessful in his revolt, however, and, having been defeated and taken prisoner, was confined on the island of Hydra. But the Grecian leaders were soon compelled to liberate him, and to place him at the head of affairs in the Morea, in order to satisfy the people of that part of Greece, among whom he was very popular, and to oppose the progress of Ibrahim Pasha. In 1827 he assisted to elect Capo d'Istria president of Greece, and was afterward confirmed by him in his command of the Morea. He was a member of the provisional government established after the assassination of that statesman in 1831. Opposed to the regency which was established during the minority of Otho, and detected in a conspiracy against that government, he was condemned to death in April, 1834. His punishment was, however, in consideration of the valuable services he had rendered the state, commuted to imprisonment for 20 years in the citadel of Nauplia; and Otho on his being declared of age in the following year granted him a full pardon, restored him to his old rank as general, and bestowed on him the decoration of the order of the Saviour. From this time until his death he lived quietly at Athens, where he composed his "Memorabilia" relating to the history of Greece from 1770 to 1836, which were published at Athens in 1851.

COLOCYNTH, the fruit of *citrullus colocynthis*, a plant of the order *cucurbitaceæ*, somewhat resembling a small watermelon, and growing in various parts of Asia and Africa. The pulp of the fruit, deprived of rind and seeds, is intensely bitter and powerfully cathartic. These properties are due to colocynthine, a neutral bitter substance existing in the dried pulp in the proportion of about 14 per cent. Colocynth is used in medicine chiefly in the form of compound extract, in which it is combined with aloes, scammony,

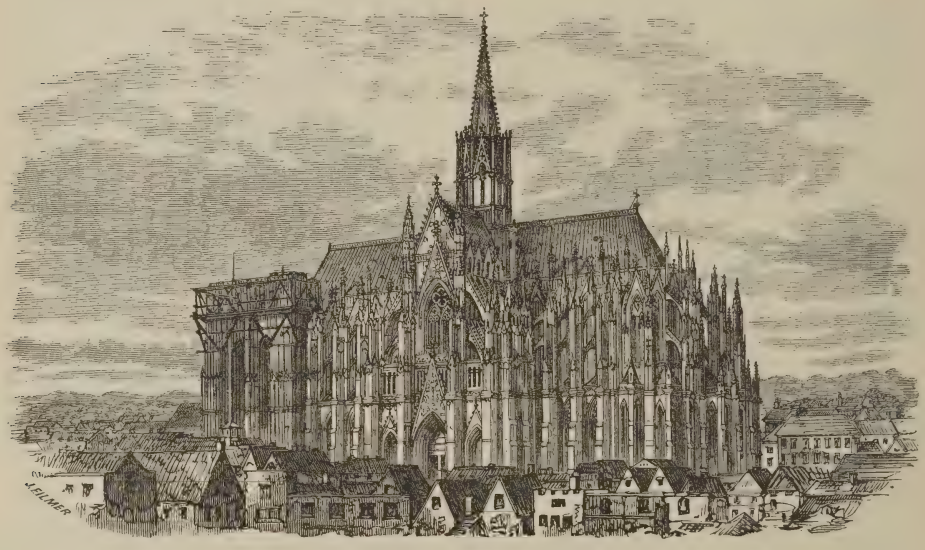


Colocynth.

cardamom, and soap. This combination renders its action milder, but not less efficacious. It is still further combined with calomel, jalap, and gamboge, in the compound cathartic pill. A tincture is used in Germany. The unripe fruit is said to be eatable when pickled. A hybrid between the colocynth and the watermelon has been produced in this country, which possesses the bitterness and purgative properties of the former.

COLOGNE (German, *Köln*), a city of Prussia, capital of the province of the Rhine and of a district of the same name, situated on the left bank of the Rhine, in lat. 50° 58′ N., lon. 7° E., 38 m. E. N. E. of Aix-la-Chapelle; pop. in 1871, 129,233, mostly Roman Catholics. The suburb of Deutz, upon the opposite bank of the Rhine, is connected with it by a bridge of boats and by an iron railway bridge 1,352 ft. long. The city forms a semicircle which rests upon the Rhine, and is surrounded by strong

walls and protected by forts. Most of the streets are narrow and crooked. Of the public places the finest are the Heumarkt, Waid, Altmarkt, and Neumarkt. The city is the seat of courts of appeal, and of an archbishopric founded in the 8th century. The most noted manufacture is that of eau de Cologne, for the production of which there are 24 establishments. Among the other manufactures are silk and cotton goods, machines, tobacco, lace, paper, wax, soap, and musical and optical instruments. The Rathhaus or town hall has a Gothic tower and a marble porch in the renaissance style. It contains the Hansa-Saal, in which the Hanseatic merchants held their meetings. Another fine building is the Kaufhaus, also called the Gürzenich, from the person who gave the ground upon which it stands. In the hall on the first floor diets of the empire have been held and emperors entertained. It is now used for balls, concerts, &c. The Templars' house is now used for an exchange. The buildings for the government offices, the court of appeals, and the archbishop's palace are all handsome. But the most remarkable building is the cathedral, commenced about 1250, but still unfinished. It is 511 ft. in length, 231 in breadth, and the towers when completed will be 511 ft. high. It is said to be the largest specimen of Gothic architecture in the world. (See CATHEDRAL.) The repair of the building was commenced in 1830 under King Frederick William III., and its construction was carried forward under Frederick William IV. Large sums were appropriated by the government, and money was also raised by private subscription, and by an association called the *Dombauverein*, with branches throughout Eu-



Cologne Cathedral in its present condition.

rope. The nave, aisles, and transept were consecrated in 1848, and the whole interior was thrown open in 1863. The portals, after designs by Zwirner, are finished; the one facing toward the south is greatly admired. Cologne has many other beautiful churches, of which those of St. Gereon, St. Peter, St. Cunibert, St. Ursula, and those of the Jesuits and of the Apostles are the finest. It has also a handsome synagogue, in the oriental style, for the construction of which the banker Oppenheim furnished the funds and Zwirner the designs. The Wallraf-Richartz museum was built by Richartz to contain a large collection of paintings bequeathed to the city by Wallraf. The university of Cologne, famous in the middle ages, no longer exists. There is a public library of 60,000 volumes.—Cologne had its origin in a camp which was pitched upon its site by the Romans in the time of Marcus Agrippa. Afterward the Ubii were transferred to it from the right bank of the Rhine, and it became the Oppidum Ubiorum. Agrippina, the daughter of Germanicus and the mother of Nero, a native of this place, induced her husband Claudius to found a colony here in A. D. 51. The town then received the name Colonia Agrippina, which it still retains in part. The foundations of the Roman walls remain, and may be traced through the heart of the city. Some suppose that traces of the Roman descent of its inhabitants may be found in their features and complexion. Down to the time of the French revolution the leading citizens were styled patricians, and the two burgomasters wore the consular toga and were attended by lictors. From the beginning of the 13th to nearly the end of the 15th century

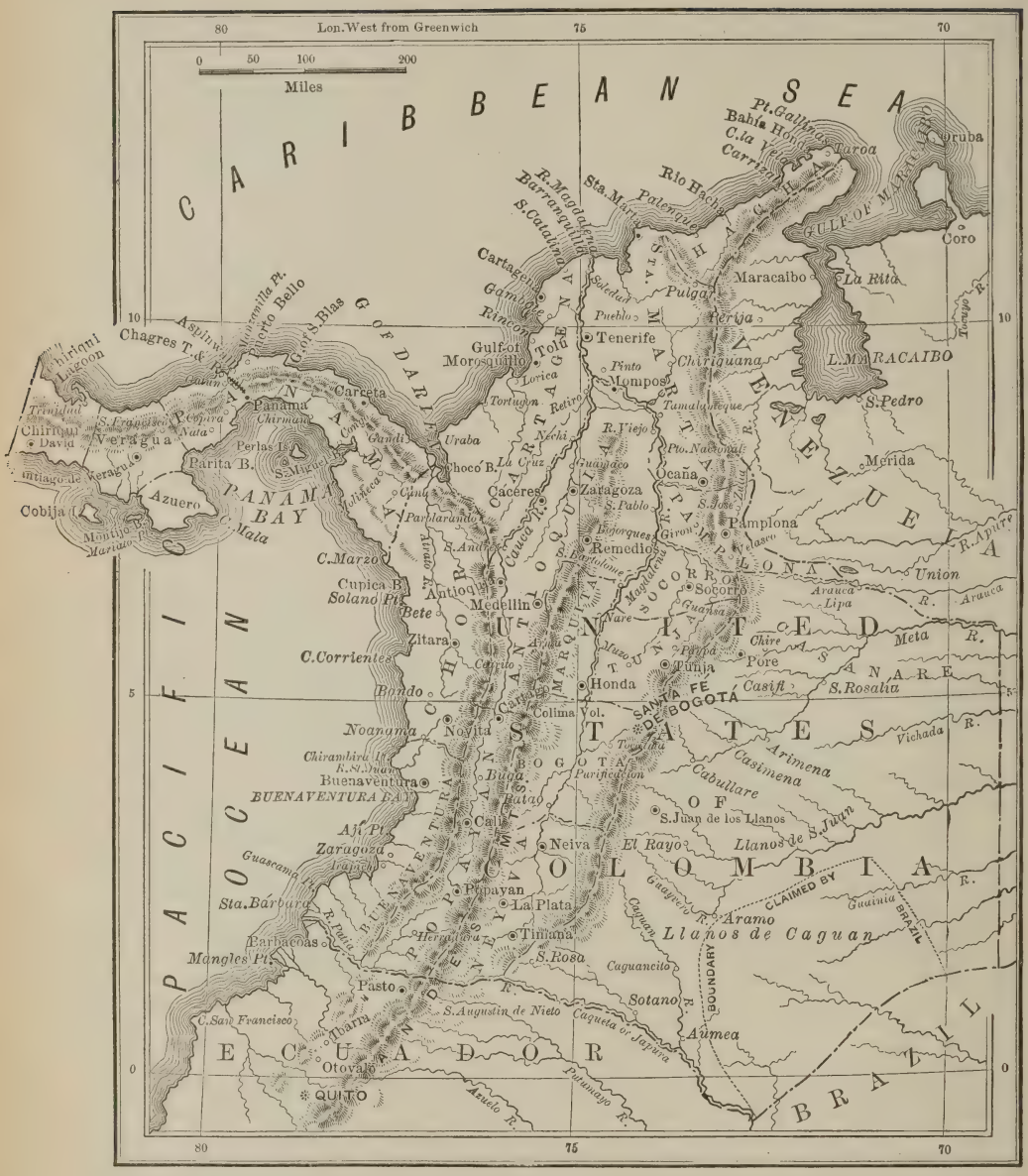
Cologne was one of the principal cities of the Hanseatic league. When most powerful it could put 30,000 men into the field. In 1259 it obtained the right to require that all goods which arrived in vessels should be unloaded and shipped in Cologne bottoms. Important commercial privileges were granted to it in England. It was the channel of commerce with the East, and had business relations with Spain, Portugal, and Italy. The celebration of the carnival, and the exhibition of puppets, which are still kept up, bear witness to the influence of Italian tastes. Cologne was sometimes called the Rome of the north. Various causes contributed to the diminution of its prosperity. The route of commerce was changed. The clergy acquired undue influence, and feuds arose between them and the citizens. The Jews were expelled. Disturbances were afterward created by the weavers, and the magistrates caused their looms to be destroyed, in consequence of which they left the city. In the 16th century restrictions were placed by the Dutch upon the navigation of the Rhine; and in 1618 the Protestants were banished from the city. As prosperity diminished, the number of beggars and priests increased, until it was said that the beggars were 12,000 in number, and that there were as many steeples in Cologne as there are days in the year. In 1794, when the city fell into the hands of the French, it contained about 40,000 inhabitants, of whom more than one fourth lived by mendicity. The French government at once attacked this social evil. It secularized many churches and religious foundations, and adopted the most stringent measures against the abuses which had grown out of them. In 1814 it was restored to Prussia. The restrictions upon the navigation of the Rhine were removed in 1837; steamboats have been introduced, and railways have been constructed, by which Cologne is connected with all the principal cities of the continent. In February, 1873, a proposition was submitted by Prince Bismarck to appropriate $9,000,000 for the erection and improvement of fortifications. The *Kölnische Zeitung* is one of the most influential newspapers in Germany, being the organ of the liberal party, as the *Kölnische Volksblätter* is of the Roman Catholics.

COLOGNE WATER. See EAU DE COLOGNE.

COLOMBIA, United States of (*Estados Unidos de Colombia*), formerly NEW GRANADA, a republic of South America, lying between lat. 12° 21′ N. and 1° 20′ S., and lon. 68° 52′ and 83° 5′ W. It is bounded N. by the Caribbean sea, N. E. and E. by Venezuela, S. E. by Brazil, S. by Ecuador, and W. by the Pacific ocean and Costa Rica. Its extreme length from N. to S. is about 1,000 m., extreme breadth about 760 m.; but its average breadth is much less, it being only 28 m. wide at the isthmus of Panama. The area is estimated at from 480,000 to 521,000 sq. m. The republic is divided into nine federal states, which, with their areas, population, and capitals, are as follows:

STATES.	Area, sq. m.	Population, 1870.	CAPITALS.	Population.
Antioquia	24,823	365,974	Medellin	14,000
Bolivar	27,027	225,060	Cartagena	8,500
Boyacá	33,849	482,874	Tunja	8,000
Cauca	260,000	435,078	Popayan	8,000
Cundinamarca	79,845	409,602	Bogotá	46,000
Magdalena	26,950	85,255	Santa Marta	2,000
Panama	31,921	220,542	Panama	18,000
Santander	16,293	425,427	Socorro	12,000
Tolima	18,476	230,821	Ibagué	5,000
Total	518,384	2,880,633		

Bogotá, the national capital, with its environs, forms a federal district, but the city is also the capital of the state of Cundinamarca.—The coasts of Colombia are deeply indented by large and fine bays, the principal of which are the gulfs of Darien and Maracaibo on the Caribbean sea and the gulf of Panama on the Pacific. There are many smaller bays on both oceans, which make excellent harbors. Among the chief ports, besides the free ports of Panama and Aspinwall or Colon, are Cartagena, Sabanilla, Santa Marta, and Rio Hacha on the Atlantic, and Buenaventura on the Pacific. Chiriqui lagoon and Porto Bello, on the Caribbean sea, and Humboldt, Cupica, and San Juan or Chirambira, on the Pacific, also furnish good harbors. There are numerous islands along the coast, none of which are very large. In the Caribbean sea are the islands of San Andrés and Providence. In the Chiriqui lagoon are 11 islands, of which Boca del Toro is the largest, and there are many more along the coast of Cartagena. In the gulf of Panama are the island of Tobago and a group called the Archipelago of Pearls.—The surface of Colombia is more equally diversified than that of any other South American state, being nearly evenly divided into mountain, valley, and plain. Not far from the borders of Ecuador, about lat. 1° 20′ N., the range of the Andes separates into two branches. The W. branch, which follows the line of the coast, is called la Cordillera de la Costa. The E. branch pursues a N. E. course from the point of separation until it reaches lat. 1° 50′ N., when it again divides and forms two chains nearly parallel, between which lies the valley of the Magdalena. The most easterly of these chains, which follows the right bank of the Magdalena, is called the E. Cordillera of Cundinamarca. Between the central and the coast range is the valley of the Cauca, and W. of the latter the mineral region of Choco. By some the eastern range is called the Cordillera de la Suma Paz, from the mountains of the name near Bogotá; the central, the Quindiu; and the western, the Choco. The latter, though comparatively low, has few and difficult passes. The E. branch is much the greatest in extent, and consists of a series of table lands or plateaus, from 8,000 to 14,000 ft. in elevation. In this plateau, which is cool and salubrious, the ancient Chibchas had their seat. It produces in the greatest profusion the fruits and grains of the temperate zone, and


Lon. West from Greenwich
80
75
70
0 50 100 200
Miles
CARIBBEAN SEA
PACIFIC OCEAN
Pt. Gallinas
Bahía Honda
C.la Vela
Carrizal
Taroa
Coruba
Coro
GULF OF MARACAIBO
Maracaibo
La Rita
L. MARACAIBO
Río Hacha
Sta. Marta
Palenque
R. Magdalena
Barranquilla
S. Catalina
Cartagena
Gamboa
Rincon
Tolu
Gulf of Morosquillo
Pueblo
Tenerife
Pinto
Mompos
Pulga
Heriya
Chiriquana
S. Pedro
Merida
Tumaluque
Pto. Nacional
Ocaña
Zaragoza
S. Pablo
Girón
Pamplona
Remedios
Socorro
Union
Araucá
Lipa
Arauca
Meta
Pore
Tunja
Honda
Casiff
S. Rosalia
Vol. Tolima
Nevado de Ruiz
Arimena
Casimena
Cabullare
Llanos de S. Juan
S. Juan de los Llanos
El Rayo
Neiva
Caguan
Llanos de Caguan
Aramo
Guainia
CLAIMED BY BRAZIL
BOUNDARY
Caguancito
Sotano
Aimea
Caqueta or Japura
Yapurá R.
Amazon R.
Tocuyo R.
Aguaro R.
Apure R.
Orinoco R.
Chagres R.
Chiriqui Lagoon
Chiriqui
David
Veraguas
Parita B.
Azuero
Cobija
Montijo B.
Mariato Pt.
Panama
Carreta
Trinidad
S. Francisco
Pequeni
Chirmana
Nata
Perlas I.
S. Miguel
PANAMA BAY
C. Mala
Aspinwall
Porto Bello
Colon
S. Blas
GOLFO DE SAN BLAS
Gandi
Uraba
Choco B.
La Cruz
Caceres
Zaragoza
Nechi
R. Viejo
Guayabico
Parlamento
Cauca R.
Antioquia
Medellin
Bete
Zitara
C. Marzo
Cupica B.
Solano Pt.
C. Corrientes
Bondo
Noanama
Novita
Colima
Chiramirá R.
R. S. Juan
Buenaventura
BUENAVENTURA BAY
Buga
Cali
Aji Pt.
Zaragoza
Guascama R.
Sta. Bárbara
Barbacoas
Mangles Pt.
Papayan
La Plata
Timana
Pasto
S. Rosa
S. Augustin de Nieto
C. San Francisco
Otovalo
QUITO
Tuquerres
Patia R.
Mira R.
Remolinos
Honda
Girardot
Tocaima
Bogotá
Fusagasuga
Purificacion
Ibague
Guamo
Espinal
Neiva
Timaná
Sombrero
Tolima
Nare
Guaduas
Mariquita
Magdalena R.
Cauca R.
Cauca Valley
Cordillera Occidental
Cordillera Central
Cordillera Oriental
Sierra Nevada de Santa Marta
Sierra de Merida
Sierra de Perija
Cordillera de Bogotá
Cordillera de Pamplona
Cordillera de Merida
Cordillera de Mérida
Cordillera de Caracas
Cordillera de Barquisimeto
Cordillera de Barquisimeto
Cordillera de Barquisimeto

part of the isthmus are covered with luxuriant and almost impenetrable forests, and are little known. The whole Atrato valley was once a vast estuary of the sea, whose waves broke upon the very feet of the Cordilleras. The fossiliferous rocks near the head waters of the Tuira show that the country was at one time submerged by the Pacific ocean, shell fish of the same character as the fossils being found living both in the Pacific and the Atlantic at the present time. The swamps about the Atrato river rest on beds of gold-bearing clay, which the natives wash with considerable profit. Toward the close of the last century a channel was cut by a monk across the so-called isthmus of Raspadura, connecting the head waters of the Atrato and of the San Juan, passing near Quibdo, lat. 5° 50′ N., by which communication by boats is still maintained between the Atlantic and the Pacific. The valley of the Cauca, between the W. and central ranges of the Cordilleras, is one of the richest, most fertile, and most populous districts in South America. It consists of two plateaus of different elevation and temperature. The soil is deep, and tinged with a red or yellow color. The pastures are rich, and the lands are well cultivated. The valley of the Magdalena comprises an area of about 75,000 sq. m. The soil is very fertile, but the climate is hot, and in portions insalubrious. Owing to the wide ramifications of the Andes, a large part of Colombia lies at an elevation of from 5,000 to 10,000 ft. above the sea; but in consequence of the unhealthfulness of the coast and the inaccessibility of the mountain passes, the great resources of the country are comparatively undeveloped.—On the east the river Orinoco forms a part of the boundary line between Colombia and Venezuela, and on the south the Putumayo separates it from Ecuador. Into the former flow the Guaviare, Vichada, Meta, and a number of smaller streams. The principal affluents of the Marañon or Amazon in the republic, besides the Putumayo, are the Rio Caqueta, sometimes called the Japura or Hyapura, and the Rio Negro. The Vaupes or Ucayari is a branch of the latter. Colombia has the right of navigating the Amazon and the Orinoco. But the most important of all its rivers is the Magdalena, with its tributary the Cauca. They traverse nearly the entire country from N. to S. They both rise in the Andes, about lat. 2° N., and pursue a nearly parallel course, the former on the east and the latter on the west of the central range, until they unite in lat. 9° 20′ N., again to divide in lat. 9° 57′, and fall into the Caribbean sea by two deltas, one in lat. 10° and the other in lat. 11° 7′, forming an island of 3,150 sq. m. The Magdalena, navigated by steam to Honda, is on an average 1,750 ft. lower than the Cauca, whose stream is therefore very impetuous. The Funza, which rises 100 m. N. of Bogotá, runs in a S. W. direction to Tequendama, where it plunges down a precipice over 600 ft. high, falling from the region of oaks, willows, and wheat, to that of the palm and sugar cane. The Atrato rises in lat. 5° 20′ N., flows N., and falls into the gulf of Darien. To the distance of 180 m. from the sea it is deep enough for the largest ships; and extensive traffic between Quibdo and Cartagena is carried on by *bongos*, or large canoes. The navigation of this river and those of the isthmus was prohibited on pain of death by Philip II., lest foreign powers should gain a knowledge of means of connecting the two oceans. The rivers draining the W. chain of the Cordilleras into the Pacific are small. The most important are the Patia and the San Juan, which communicate with the high, salubrious, and fertile districts of Popayan, Pasto, Tuquerres, and the famous valley of Cauca, which Bolivar called the "Italy of America." Small lakes are numerous in the mountains, but there are none of large extent. Paletara, Las Papas, Una, and Caucagua are the most noteworthy. Into Guatavita, a small lake near Bogotá, the Indians are said to have thrown their treasures when about to abandon the country to the Spaniards. Curious and valuable articles have been fished up from its depths, but attempts made to drain it have proved a failure. —The geological conditions of Colombia are equally extraordinary and perplexing. Everywhere are found traces of stupendous cataclysms, and a disarrangement and intermixture of primitive and sedimentary rocks, which seem to set classification at defiance. In some places great rivers and even small streams have cut through mountains of the hardest rocks, leaving dizzy escarpments on each side; in others are enormous subsidences in the earth, as if the props of its surface had suddenly given way, or vast caverns glistening with stalactites; while everywhere colossal masses, lifted high above the general level, attest the violence of volcanic agencies. These agencies are still active in places, as in Batan near Sogamoso, where the soil is so much heated that, although in the heart of the Andes, it produces all the fruits of the tropics. The celebrated Colombian geologist, Joaquin Acosta, describes great glaciers which he saw in the Paramo of Ruiz, a phenomenon which escaped the attention of both Humboldt and Boussingault. Col. Codazzi demonstrated that in the highlands of Bogotá, Tunja, and Velez, where is now the densest population, there once existed a system of broad and deep lakes, which, breaking through their barriers, precipitated themselves through what is now the river Suarez or Sogamoso into the ocean, leaving the traces of their irruption boldly marked on the face of the country. The same authority conceives that this great cataclysm may have occurred within the past four centuries. Some evidence in support of his theory is afforded by two great stones which have been discovered on opposite sides of what must have been the borders of the principal lake; both

face toward the points of rupture of the mountains, and the faces of both are covered with sculptures, among which are distinguishable figures of the frog (the Chibcha sign of water) with outspread feet, and human figures with upraised arms, in attitude of surprise or alarm. Among the natural curiosities of the country are the falls of Tequendama; the natural bridge of Pandi or Icononzo, spanning the river Suma Paz at an elevation of 600 ft.; the cascade of the Rio Vinagre, so called from the sulphuric acid with which its waters are charged; the great orifices called Hoyo del Aire and Hoyo de los Pájaros, near Velez; the Peñon de Quitisoque, from the symmetrically pierced summit of which fall three beautiful streams of water; the Fura-Tena (man and woman in the Chibcha language), and the Boqueron de Peña Armada, which are two stupendous cuts or excavations made by the Rio Minero, the second 10,650 ft. deep; and the natural tunnel of the Rio Suarez.—From Costa Rica to Venezuela, Colombia abounds in auriferous alluvions of great extent. There is hardly a state which does not possess in its soil more or less gold. It is claimed that Choco, Antioquia, Mariquita, Popayan, Pamplona, Ocaña, Bucaramanga, and other places are exceedingly rich in that metal. The auriferous sands of Antioquia, according to M. Dufrénoy, afford results very nearly coinciding with those of California. Small diamonds are found with the gold, and in the same district the sulphate of mercury is abundant. Choco produces platinum, and Muzo emeralds; and in various parts of the country are mines of silver, copper, lead, iron, quicksilver, coal (in Bogotá, Cali, Soata, Chiriqui, &c.), amethysts, and other varieties of rare and valuable stones and minerals. The great coal bed of Cali, it is believed, extends beyond the Cordilleras to the Pacific. On the table lands of Bogotá, Tuquerres, Tunja, and Pamplona rock salt abounds, and lime, sulphur, alum, magnesia, asphaltum, and other valuable minerals exist in inexhaustible quantities in various parts of the republic.—The climate of Colombia presents remarkable contrasts and nearly every variety of temperature. The lower part of the valley of the Magdalena is oppressed with almost tropical heat. The waters of the river are lukewarm, and at Honda, 1,000 ft. above the level of the sea, stones exposed to the sun's rays are too hot to place the hand upon. The mortality in this region is great, more especially among children. At Cartagena, as well as on the W. coast, the yellow fever is endemic, and the lowlands are dangerous to both Europeans and the people of the highlands. On the plateaus the air is salubrious and the temperature is that of perpetual spring. On the plain of Bogotá, which is 8,000 ft. above the sea, the thermometer ranges from 55° to 70° F., and the rain in the wet season falls but a few hours daily in the afternoon. The summits of the Cordilleras are usually covered with mists, and the tops of the highest with perpetual snow. In the forests of Darien the rain falls almost unceasingly, and the gulf of Choco is seldom free from violent storms.—The flora combines almost all the products of the tropical, intertropical, and temperate zones. Within a single day's journey one may encounter the four seasons of the year and the vegetable peculiarities of all these zones. Rice, cotton, tobacco, sugar cane, and all tropical fruits grow along the coast; and the elevated plains yield maize, wheat, potatoes, and all the European fruits. The vast forests, yet imperfectly explored, abound with valuable productions. In Popayan the cinchona grows to perfection, and the sides of the mountains of Tolima are clothed to an elevation of 8,500 ft. with wax palms 200 ft. high. Besides these are found the pitayo, cedar, balsam of Tolu, vanilla, lignum vitæ, mahogany, caoutchouc, and the three trees perhaps most precious of all, the albataque, the vine of the cross, and the arisa, all remarkable specifics, the first against inflammation, the second for stanching effusions of blood, and the third for instantaneously stopping bleeding at the nose. Notwithstanding the luxuriance of the vegetation, the species are not intermingled. Each kind occupies some tract of its own, where it flourishes to the almost total exclusion of others.—Colombia abounds in animal life. The rivers swarm with alligators and wild fowl, and myriads of flies render life almost unendurable in the lowlands. Boa constrictors and poisonous serpents, the jaguar, the puma, and others of the feline tribe, and monkeys of many species abound in the tropical forests. The sloth, armadillo, anteater, and cavy also inhabit the lower forests; deer of different kinds are found at all heights; and the bear and marmot approach the limits of perpetual snow. At the height of about 3,000 ft. the alligator and boa constrictor disappear, and the tapir, the largest quadruped of the country, is seen. Popular tradition reports the existence in the vast unexplored forests of the *panchique* and *mancarita*, enormous quadrupeds never seen alive, but whose tracks, those of the first round, and those of the second marked with three great toes, have been often observed in the mountains of Coconuco in Popayan, and at Piedecuesta in Santander. It is affirmed that on the line of the tracks of the panchique the branches of the trees have been broken off to the height of 15 feet. The condor soars above the snow line of the Andes, and the forests are alive with innumerable varieties of insects and birds. Among these the changeable butterfly of Muzo is without a rival in its beauty, and the troopial is not excelled by the nightingale for its song. The bird of Velez, called *sol y luna* (sun and moon), has the image of both those luminaries on its wings. On the coast turtles and fish abound, and pearls and coral are found in the bay of Panama and near Cartagena.—The population of Colombia is made up of

whites, mostly of Spanish origin, negroes, and Indians, and their mixtures. The whites constitute rather less than 1,000,000 of the total population, and the mestizos about the same number. Of mulattoes and civilized Indians, there are about 300,000 each, and the remainder is made up of negroes, zambos, and savage Indians numbering 120,000. The better classes of the people are distinguished for intelligence, festive humor, hospitality, and generous impulses. The educated classes rank among the first in South America for their scientific and literary culture. The people of Socorro and Antioquia are laborious and enterprising. The women of Antioquia, Bogotá, Ocaña, and other cities are celebrated by travellers for their grace and beauty. In Bogotá the French fashions predominate, and the inhabitants incline to European manners. Gaming is universal, and cock fighting is a favorite sport. On the coast the people, from the climate, are wanting in energy and color. The llaneros on the plains wear nothing but a shirt and light drawers, a straw hat, and bark sandals. They ride without a saddle, and live almost entirely on beef. The language is generally Spanish, excepting among the uncivilized Indians, who speak their own aboriginal tongues.—Industry is generally backward. Agriculture is mostly in the hands of the converted Indians, who cultivate the soil in the rudest manner, and the reclaimed land bears but a small proportion to the whole. The cereals are raised to some extent on the elevated plains, and rice, cotton, sugar, coffee, tobacco, cacao, and tropical fruits along the coast. On the eastern plains, toward the Orinoco, the inhabitants, who are chiefly creoles, are devoted almost exclusively to the raising of horses, mules, and cattle. For want of both capital and labor, the mining industry is vastly inferior to the mineral resources of the country. The chief silver works are those of Santa Ana, near Bogotá. Gold abounds in the entire Atlantic region, and, in spite of the rude machinery used, the quantity obtained is far from insignificant; the washings on all the tributaries of the Atrato are extremely productive, but less so E. of the Cordilleras. The emerald mines of Muzo, in the valley of Tunja, near Bogotá, are worked carelessly, but produce enough to meet the constant demand from Europe. The pearl fisheries are mostly neglected. Coal, copper, and iron are mined to some extent near Bogotá; and the salt mines at Cipaquirá, about 30 m. N. E. of Bogotá, produce enough to supply the neighboring states. Manufactures can scarcely be said to exist, native industry not sufficing to supply the wants of the country. Almost all manufactured articles in use are imported. In Bogotá and some other towns cotton and woollen cloths, carpets, straw hats, soap, and leather are produced, but not to any great extent.—The commerce of Colombia, though fast increasing, is still far below the capabilities of the country. The exports consist mainly of cotton, cinchona, coffee, cacao, India rubber, raw hides, tobacco, silver ore, cochineal, indigo, other dyestuffs, and emeralds; and the imports, of cotton, linen, woollen, and silk fabrics, clocks and watches, hardware, machinery, firearms, gunpowder, fermented liquors, &c. The total value of the exports and imports for 1870 was as follows:

COUNTRIES.	Exports.	Imports.
England	$1,849,000	$2,891,889
Germany	2,720,000	168,502
France	1,491,000	1,472,422
Venezuela and Peru	333,000	240,261
United States	663,000	407,284
West Indies	228,000	211,326
Other countries	1,000,000	663,138
Total	$8,284,000	$6,053,772

One half the trade is carried on through the isthmus, the exports and imports of which *in transitu* average each about $50,000,000. The direct exports and the imports for 1873 show an increase of 75 per cent. as compared with those of 1870, chiefly due to a larger number of steamship lines to Colon (Aspinwall). About 75 per cent. of the goods exported through that port go to the United States. Most of the Colombian commodities are known in England only as Venezuelan (Maracaibo) productions. Steamers run weekly from Panama to the principal Pacific ports S., and to San Francisco and intermediate ports N.; to Aspinwall there are American steamers bi-monthly, and several British and French lines; and in 1873 an American line was established between New York, Santa Marta, Sabanilla, and Cartagena. The annual shipping movements in all the principal ports comprise about 1,200 vessels, steam and sail, with an aggregate of 300,000 tons. Steamers ply on the Magdalena, but the navigation of this river is growing more and more difficult each year. The internal carrying trade is done by *bongos* (large canoes) on the rivers, and by mules. Many new roads are in process of construction; but much has yet to be done in this respect. Besides the railways from Panama to Aspinwall (48 m.), and from Sabanilla to Barranquilla (18 m.), both in prosperous operation, proposals were made in 1873 to build other lines to the extent of 800 m., to be completed in 12 years, at a nominal cost of $85,000,000. Some surveying and grading have already been performed (January, 1874). With the telegraphs on the two railways now running, and that from Bogotá to La Mesa, it is expected that at the end of 1874 1,500 m. of wires will be established. A submarine cable from Aspinwall to Kingston, Jamaica, has not been in use for over a year.—Bogotá, Medellin, and some of the other state capitals have each a university or collegiate school, besides seminaries, and scientific, normal, and primary schools. Large appropriations were made by congress in 1873 for the establishment of new schools, so that Colombia will soon be in the matter of primary instruction among the most advanced of the

South American states. The government supports a district school in each parish.—The government of Colombia is republican, founded on a written constitution adopted in 1863, modelled after that of the United States, but differing in some particulars. The executive power is vested in a president elected for two years; the legislative authority in a congress, consisting of an upper house, or senate, and a house of representatives. The senate has 27 members, each of the nine states sending three. The house of representatives, elected by universal suffrage, is made up of delegates from the several states, each sending one member for every 50,000 inhabitants, and an additional one for a fraction of 20,000 and over. A vice president, elected for the same term as the president, acts as chairman of the senate. The president's powers are exercised through four ministers, or secretaries, viz., of the interior and of foreign affairs, of finances, of the treasury and the national credit, and of war, all responsible to congress. The highest court of justice is the supreme court, which has three judges and a procurator general. Each of the states has its own legislature and executive officer. The Roman Catholic faith predominates, the head of the hierarchy being the archbishop of Bogotá; but there is absolute independence of church and state. All other religions are tolerated, and there is perfect freedom of worship. The army in time of peace consists of 1,420 men; in time of war, each state furnishes a contingent of 1 per cent. of the population. There is no navy. The national income, about one half of which is derived from the customs, was made up of the following elements in 1870:

Customs receipts	$1,431,923
Salt monopoly	758,329
Panama railway	250,000
Mint	29,213
Postal service	51,282
National property	26,600
Public lands	6,817
Sundry receipts	185,613
Total	$2,739,777

The expenditures of the same year were a little over $3,000,000. The total income for the year ending Aug. 31, 1872, was $3,219,733; for 1873 it reached $3,400,730; and the expenditures for the latter year were $3,250,730, leaving a surplus of $150,000. According to the president's message of April 4, 1872, the foreign debt amounted to $33,362,250, and the home debt to $9,899,710. The interest paid on the former was about $750,000 annually, under the act of congress decreeing that 37½ per cent. of the net customs receipts should be thus applied. The foreign debt has been, however, by agreement with the creditors, transformed into a debt of $10,000,000, at an annual interest of $450,000, dating from Jan. 1, 1873.—The inhabitants of the country on its discovery were, like those of Mexico and Peru, distinguished into two grand branches: the savages of the lowlands and coast regions, and the semi-civilized family of the table lands. The Colombian highlanders were the Muyscas, or more properly Chibchas, the word Muysca in the Chibcha tongue merely signifying "men" or "people." The origin and the elements of civilization introduced among them were attributed to two mythical beings, Bochica, or Bochia, and Nemterequeteba, who are frequently confounded with one another. Bochia was the more mythical of the two, was regarded as divine, and even as equal to the sun. His companion Chia, or Huitaca, occasioned through her magical art the submersion of the beautiful valley of Bogotá, and for that reason was banished from the earth by Bochia, and made to revolve round it as the moon. Bochia next struck the rocks of Tequendama, and thereby opened a passage through which the waters flowed off in the neighborhood of the Giant's Field. Such is the traditional origin of the picturesque falls of Tequendama. Nemterequeteba, surnamed Chinzapogua (the messenger of God), corresponding to the second Buddha of the Hindoos, was regarded as a human being. The country was ruled by three powers. The spiritual chief was the electoral high priest of Iraca or Sogamoso; the temporal princes were the *zaqui* of Hunsa or Tunja, and the *zipa* of Funza, who would seem to have been in the feudal constitution originally subordinate to the zaqui. The Chibchas had a regular system of computing time; for money they used small circular gold plates, all cast of equal size. Their temples of the sun were built with stone columns, some vestiges of which were discovered in Leiva at the beginning of the present century. Their language was rich, sweet, and harmonious. The people were frugal and industrious, but little versed in the art of war, for, although numbering about 2,000,000, Quesada subjugated them with 200 Spaniards. Other architectural relics in various parts of the country were probably the work of a still more highly cultivated race than the Chibchas, and perhaps allied to the Aymaras of Upper Peru. Of the origin of the coast Indians, such as the Mesayas, Goajiros, &c., still mostly in a savage state, and speaking their own languages, little is known, except that they bear no resemblance to any of the other American families.—The coasts of Colombia were discovered by Alonso de Ojeda in 1499, and visited by Rodrigo Bastidas in 1501, and by Columbus in 1502. It was first called Tierra Firme by the Spaniards, and Castilla de Oro, or "Golden Castile." The conquest was effected in 1536–'7, and the country erected into a viceroyalty called New Granada in 1718. The first efforts for emancipation from Spain were made in 1781 and 1795; independence was proclaimed in 1811, and secured by Bolivar in 1819, when a union was formed with Venezuela and Quito, under the name of the republic of Colombia. (For an account of the struggle for independence, see Bolivar.) This union was dissolved in 1829 by the withdrawal

of Venezuela, and in 1830 Ecuador also withdrew. The republic of New Granada was organized Nov. 21, 1831. In 1832 a constitution was promulgated and the republic was divided into provinces, each of which controlled its local affairs. Under this constitution the president's term of office was four years. Gen. Santander was president from 1833 to 1837 inclusive; Dr. Marquez, 1837–'40; Gen. Herran, 1841–'4; Gen. Mosquera, 1845–'8; Gen. Lopez, 1849–'52; Gen. Obando, whose term was concluded by the vice presidents Obaldia and Mallarino, 1853–'6; Dr. Ospina, 1857–'60. In the beginning of 1860 an important revolution broke out. The liberal party, under the leadership of Gen. Mosquera, rose in arms against President Ospina, who was the representative of the federal or conservative party. Bogotá was captured July 18, 1861, and the reins of government were assumed by Mosquera. The federals, who controlled the southern portion of the republic, made Antioquia the seat of their government. The representatives of the liberal states met in a congress at Bogotá which closed Oct. 20, 1861, assumed the name of the United States of Colombia, adopted a new constitution, and conferred dictatorial power on Mosquera. In November, 1862, Gen. Arboleda, the leader of the conservative troops, was assassinated, and was succeeded by Gen. Canal. An agreement was finally made between the latter and Mosquera, Dec. 29, 1862, which put an end to the civil war. Gen. Canal and his troops submitted to the authority of the United States of Colombia, and the latter granted an anmesty to political offenders. Deputies from all the states met in convention at Rio Negro, in Antioquia, Feb. 4, 1863. Mosquera resigned to this body his dictatorial powers, and the convention appointed a provisional government, composed of five ministers, who were to hold office during the forming of the new constitution. The constitution which was framed bears the date of May 8, 1863. Mosquera was appointed provisional president, to hold office till April 1, 1864, when the executive elected by the people in 1863 was to take his place. During Mosquera's administration there was to be no fixed capital, he having the power to move it where he pleased; after the close of his term it was to be at Bogotá. The president's term of office was fixed at two years. Among the provisions of the constitution was one granting religious liberty, and another confiscating church property. These acts called forth an encyclical letter from the pope to the bishops of the republic, urging them to use every effort to secure their repeal, which, however, was not effected. Dr. Manuel Murillo Toro was elected president for the term 1864–'6. He was succeeded by Mosquera, who was chosen for the two years ending in 1868. He resigned Dec. 6, 1866, giving as reasons that it was impossible to replenish the treasury, which had been robbed of upward of $1,000,000 by false certificates; that the archbishop of Bogotá and other bishops were in rebellion against the executive; and that there was a general desire to disturb the public peace and to make way with him by assassination. His resignation was not accepted. In 1867, in consequence of attacks made on his policy by the majority in congress, Mosquera ordered that body to adjourn, and arbitrarily arrested 68 senators and representatives. Congress passed a resolution of impeachment April 29, and on the same day the president published a decree dissolving that body and declaring the country in a state of war. Most of the states declared in favor of congress, and Mosquera was arrested, May 25. His adherents were soon put down and peace restored throughout the country. Mosquera was tried and sentenced to two years' imprisonment and to lose all civil and political rights; but the sentence was commuted to two years' exile, and he went to Peru. The remainder of his term was filled by Gen. Santos Gutierrez. In 1868 Don Santos Acosta was sent to the United States to conclude arrangements with the government at Washington in regard to the proposed canal across the isthmus. The Hon. Caleb Cushing was sent to Bogotá for a similar purpose. Santos Gutierrez was elected president for 1868–'70. Under his administration the state of Panama suffered much from internal dissensions. An act of general amnesty permitting the return of Mosquera, passed by the lower house of congress, was rejected by the senate. In January, 1869, a treaty was concluded between the plenipotentiaries of the United States and of Colombia granting to the former power the right to construct a canal across the isthmus. It was approved by the president, but through foreign influence rejected by the Colombian senate. In the same year the United States government sent out an expedition under Commander Selfridge to make surveys in the valley of the Atrato. (See CANAL.) In 1870 a new treaty for an interoceanic canal was concluded between Gen. Hurlbut, the United States minister, and the Colombian commissioners, Señor Justo Arosemena and Dr. Jacob Sanchez; and it was approved by the Colombian congress, with some modifications. Gen. E. Salgar, the liberal candidate, was elected president for 1870–'72. He took great interest in popular education, and secured the passage by congress of a bill making an appropriation for normal schools. The bank of Bogotá, with a capital of $235,000, was established Nov. 25, 1870. Manuel Murillo Toro succeeded to the presidency for the term 1872–'4. Among the important measures of his administration is the proposal to build an interoceanic railway from the bay of Buenaventura on the Pacific, across the valley of the Cauca, and thence down the Magdalena to the Atlantic. The portion from Buenaventura to the river Cauca has been put under contract. A contract has also been made for

a submarine cable from Aspinwall to Cartagena and Santa Marta. The act amending the constitution for the establishment of a federal district, comprising Bogotá and its environs, was ratified by the senate Feb. 6, 1872. In December of the same year troubles broke out again in the state of Cauca between the conservatives and liberals, the latter led by Gen. Mosquera, who returned from exile in 1870. In 1873 Santiago Perez was elected president of the republic for the term 1874–'6. The interoceanic canal question had not been settled in 1873, but explorations were still making in the valley of the Atrato for a feasible route.

COLOMBO, or **Columbo,** a city of Ceylon, the seat of government and principal seaport, on the W. coast; pop. in 1871, 100,238. It consists of an open and a fortified town. The latter stands on a rocky peninsula, jutting out into the sea, and having on the land side a lake, a moat, and drawbridges. The interior



Cathedral of Colombo.

presents more of the appearance of a European town than any other place in India except Goa. The houses are built after a plain Dutch fashion, and many of the streets are shaded by trees. It is the residence of the civil and military authorities and most of the European families of Ceylon. The climate is humid but salubrious. The temperature in winter is about 79·1°; in summer, 80·9°. East of this portion of Colombo lies the open town, which is inhabited by a mixed population of Dutch and Portuguese descent. The suburbs are peopled by native Cingalese. The principal edifices are the government house, court house, English, Dutch, and Portuguese churches, chapels, barracks, a military hospital, and a lighthouse. There are various museums, schools, hotels, and libraries. The harbor, which is small, is defended by several forts. The roadstead is safe only during the S. E. monsoon. Colombo is the entrepot for most of the foreign trade of Ceylon, and has a number of commercial houses. It is the seat of an Anglican bishop, and of a Roman Catholic vicar apostolic. The town was occupied by the Portuguese in 1517, taken by the Dutch in 1603, and by the English in 1796. The Natande canal, from Colombo to Putlam, was opened Sept. 23, 1856, and the opening of the first railway in Ceylon was celebrated with great pomp at Colombo in 1858. In 1872 the streets were lighted with gas.

COLON. See Aspinwall.

COLON, the portion of the large intestine extending from the cæcum to the rectum, from the right to the left iliac region. It is divided into four portions: the ascending colon, on the right side, from the cæcum to the edge of the ribs; the transverse, or arch of the colon, from one hypochondrium to the other, below the stomach and above the small intestine; the descending colon on the left side; and the sigmoid flexure, in the shape of the letter S, in the left iliac region, terminating in the rectum or last portion of the intestine. Along its course it presents prominences of its walls, interrupted by three fleshy longitudinal bands, and many fatty appendages formed in the folds of the peritoneum. The peritoneal or serous coat, after covering the intestine, fixes it loosely to the vertebral column by the folds called mesocolon; the muscular coat consists of both circular and longitudinal bands, as in the cæcum; the mucous coat presents a great number of mucous follicles. The arteries of the large intestine are derived from the superior and inferior mesenteric, proceeding directly from the aorta; the veins open into the portal vein of the liver; the nerves are furnished by branches of the solar plexus. The colon in man will average about 4½ feet in length, and about 2 inches in diameter, being about a quarter as long and twice as wide as the small intestine; though the capacity is nearly the same, the absorbing surface is scarcely half that of the smaller tube, and this difference is increased by the absence of folds in the large intestine. The ascending colon lies upon the right kidney and quadratus lumborum muscle; above it is the duodenum, and in front the folds of the small intestine; the descending portion is on the left kidney and corresponding muscle, and is also covered by the small intestine. The sigmoid flexure is generally in contact with the abdominal walls, though, from its freedom of movement, it may assume a variety of curvature and position. The whole colon is very liable to displacement by the pressure of its own accumulated contents, by tumors from within, and by corsets and other articles of dress from without. It retains its sacculated shape throughout, but very gradually decreases in size toward the rectum; the fatty appendages (*appendices epiploicæ*) appear to be small reservoirs of fatty matter, and are sometimes greatly increased in cases of remarkable obesity. After the food has passed the cæcum, little is left but excrementitious matter, which collects in the sacs

of the colon, the forms of which it assumes and preserves even after having passed through the rectum. When, from want of tone in the bowel, or other causes, the fæces are delayed in these sacs, they often acquire extreme hardness and roundness, causing painful and even dangerous symptoms. Like the rest of the intestine, the colon is subject to inflammation, ulceration, and other diseases of mucous membranes; it is also the seat of dysentery.—The colon is separated from the small intestine in fishes by a slight constriction; this is the case with most reptiles. In birds the short and straight large intestine is continued from the small without a distinct separating valve, and ends in a cloaca common to the digestive, urinary, and generative organs. In mammalia there is generally a well marked colon, though in some of the edentata there is no distinction between large and small intestine; in carnivora it is short, wide, and cylindrical; in the herbivora, long and sacculated; in the horse, whose intestines are ten times as long as the body, the colon has a length of 19 feet, much curved and sacculated, and the lower portion attached loosely by a very long mesocolon; in rodents it is not much larger in diameter than the small intestine, but is provided with deep sacs; in the monotremata it gradually increases in size to the rectum; in the monkeys it is very similar to that of man.

COLONIZATION SOCIETY. The idea of sending a colony of persons of African descent from the United States to Africa appears to have first occurred to the Rev. Samuel Hopkins and the Rev. Ezra Styles of Newport, R. I. They issued a circular on Aug. 31, 1773, in which they invited contributions toward the founding of such a colony. A contribution was made Feb. 7, 1774, by a society of ladies of Newport, and aid was received from Massachusetts and Connecticut. The revolutionary war interrupted these labors. In 1784 and 1787 Dr. Hopkins renewed his efforts to obtain funds for colonization, and endeavored to make an arrangement by which free blacks from America might join the English colony of Sierre Leone. Not being successful in this, he published in 1793 an appeal in which he urged that the plan of colonization ought to be adopted in the several states and by the federal government. He continued to agitate the subject from time to time until his death, Dec. 20, 1803. The first emigrants sent from the United States were a company of 38 colored persons who were taken from New Bedford to Sierra Leone in 1815. The subject of colonization in Africa was brought before the legislature of Virginia in 1800–'2, but no definite results were obtained. Samuel J. Mills, Robert Finley, Elias B. Caldwell, and Francis S. Key were conspicuous for their exertions in drawing attention to the plan; and a meeting was held at Princeton, N. J., in the autumn of 1811, to consider the steps to be taken for the organization of a colonization society. A second meeting was held Dec. 23, and the constitution of the "American Colonization Society" was adopted Dec. 28. The first officers were elected Jan. 1, 1817, and the same year Samuel J. Mills and Ebenezer Burgess were sent to Africa to select a site for the colony. They chose Sherbro island and the coast adjoining. Mills died on the return voyage. In March, 1819, congress appropriated $100,000 for the purpose of carrying back to Africa such slaves as should be surreptitiously imported. Under the construction which was put upon this law by President Monroe, part of its design was that a residence should be provided in Africa for the agents of the United States and such slaves as were sent back. For this purpose it was necessary that emigrants should be sent out and a settlement made. The formation of such a settlement being the object for which the colonization society was organized, the government and the society determined to coöperate. The society designated 88 persons as emigrants, and the government chartered a ship, appointed an agent, and placed $30,000 at his disposal. The ship sailed Feb. 6, 1820. The emigrants were to erect huts for the reception of at least 300 recaptured Africans, and cultivate land for their own support. They did not succeed in establishing themselves on Sherbro island, but in April, 1822, made their settlement at Cape Mesurado, between Sierra Leone and the Ivory coast. The society was represented in the colony by Jehudi Ashmun, who arrived there Aug. 9, 1822. Under his leadership the colonists repulsed on Nov. 11 an attack made by 800 natives, and a second assault on Dec. 2, made by about twice the number. The agents of the United States were instructed not to attempt to exercise any power or authority over the colonists, and the government of the colony was assumed by the society. The board of managers adopted, on Jan. 26, 1820, a constitution for the colony, by which the powers of government, legislative, executive, and judicial, were vested in the society's agents. Ashmun undertook to exercise the powers which were conferred upon him, but the colonists were not disposed to acquiesce, and Ashmun for a time abandoned his undertaking. The United States government and the colonization society deputed Ralph R. Gurley to investigate the condition of affairs. He had a conference with Ashmun, the result of which was that in 1824 a plan for the civil government of Liberia was adopted, by which the society retained the ultimate decision on all questions of government. A more formal constitution was adopted Oct. 22, 1828, by which a considerable part of the civil power was secured to the colonists. This constitution was changed from time to time, and the share of the people in the government was made greater and greater. After the death of Governor Buchanan in 1841, Joseph J. Roberts, who had previously held the office of lieutenant governor, through election by the people, was appointed governor by the society.

A legislature was in existence, but its laws were subject to the veto of the society, as were also all treaties made by the colony. Several valuable tracts of land had been acquired by treaties made with native chiefs, and duties had been imposed on goods imported. British subjects who traded on the coast included within the territory of the colony landed goods without paying duties; and when their goods were seized by the government of Liberia, they applied to the British government for redress. The British authorities applied to the government of the United States, and were informed that Liberia was an independent political community, and not a colony of the United States; whereupon the British took the ground that Liberia had no existence as a nation, inasmuch as its powers were derived from an association of private individuals, which did not possess and could not impart any political authority; and that the levying of imposts being a prerogative of sovereign power, the rights of British subjects to free commercial intercourse would be enforced by arms. In this emergency the directors of the society, in January, 1846, surrendered such governmental power as they still retained, and recommended the colony to publish to the world a declaration of its true character as a sovereign and independent state. The colonists appointed delegates, who on July 26, 1847, adopted a declaration of independence and a new constitution. In 1848 the independence of the republic was acknowledged by Great Britain and France, and afterward by most of the powers of Europe and America. The Maryland colony, which had maintained a separate existence, united in 1857 with Liberia. The credit therefore is due to the colonization society of having been mainly instrumental in the foundation of Liberia, and of having guided its destinies until it became a self-supporting state. Since relinquishing all direct control over the government of Liberia, the colonization society has continued to send out emigrants, and to furnish them with provisions and temporary dwellings, and has aided in developing commerce and agriculture. It has also labored for the dissemination of Christianity, and for the promotion of education and the general welfare of the country. The abolition of slavery has not by any means put an end to the usefulness of the society; on the contrary, since that event the number of applications for passage to Liberia has very much increased. The receipts of the society from its foundation to Jan. 1, 1872, were $2,364,648 47, and those of the auxiliary societies more than $400,000. The whole number of emigrants which had been sent out at that date by the parent society was 13,598; and 1,227 had been sent out by the Maryland society, and 5,722 recaptured Africans by the United States government. The presidents of the society have been Bushrod Washington, Charles Carroll, James Madison, Henry Clay, and J. H. B. Latrobe. (See Liberia.)

COLONNA, a princely family of Italy, of which the founder claimed that he brought from Jerusalem a part of the column (*colonna*) to which Christ was bound when scourged. It is now divided into the three lines of Colonna-Paliano, Colonna-Stigliano, and Colonna di Sciarra. Pope Martin V. (Ottone Colonna), several personages who took a conspicuous part in the contest between the Guelphs and the Ghibellines, and many other persons of historical or literary distinction, were members of this family. **I. Fabrizio,** lord high constable of Naples, died there in 1520. He served in the armies of France, and afterward in those of the king of Aragon. In 1512 he was taken prisoner at the battle of Ravenna by the duke of Ferrara, by whom he was treated with much consideration. **II. Prospero,** a general, cousin of the preceding, died in 1523. When Charles VIII. of France invaded Italy, Prospero embraced his cause, chiefly because the Ursini, the hereditary enemies of his house, took the opposite side. He afterward changed sides, and fought against France. At the battle of Villafranca, in 1515, he was taken prisoner; but having been restored to liberty, he again took the field against the French, gained the battle of Bicocca in 1522, and distinguished himself by the vigor of his operations, which were cut short by his death. **III. Vittoria,** a poetess, daughter of Fabrizio Colonna, born in the castle of Marino in 1490, died in Rome in February, 1547. She was affianced by her parents when four years of age to Ferdinando Francesco d'Avalos, son of the marquis of Pescara, a child of the same age; and in their 17th year they were married. Shortly afterward her husband engaged in the war between France and Venice, receiving from Vittoria at parting a superb pavilion and an embroidered standard, as well as some leaves of palm in token of her hope that he would return crowned with honor. In his absence she occupied herself with literature and with her correspondence with him. In order to see him occasionally, she removed from Ischia to Naples. In the battle of Pavia (1525), at which Francis I. fell into the hands of his enemies, Vittoria's husband received wounds which brought on a fever, and he found it necessary to warn his wife of his dangerous condition. She at once set out for Milan, and at Viterbo was met by the intelligence that her husband was dead. Her grief caused her to lose her reason for a time. When restored she resisted offers of a second marriage from several princes who sought her hand. She turned again to literary studies, and consoled herself with the composition of poems in memory of her husband. She also composed canzonets and sonnets of a devotional character, to which she gave the title of *Rime spirituali.* In 1541 she entered the convent di Suore in Orvieto, and afterward that of St. Catharine in Viterbo. Her beauty and virtues have been celebrated by Michel Angelo, Ariosto, and other poets. Her bust

was placed in one of the collections of the capitol in 1845. A selection of her poems is contained in Gironi's *Raccolta di lirici italiani* (Milan, 1808). A memoir of her is appended to the Life of Michel Angelo by John S. Harford (London, 1857). **IV. Marc Antonio,** duke of Paliano, distinguished for the part which he took in the battle of Lepanto (1571), died Aug. 2, 1584. On his return to Rome after that battle, he was received with the highest marks of honor, and was afterward made viceroy of Sicily by Philip II. of Spain. **V. Fabio,** born in Naples in 1567, died there in 1650. He was the author of many books on botany, and the first to write a botanical work with copperplate illustrations (*Φυτοβάσανος*, Naples, 1592).

COLONSAY, one of the Hebrides or Western islands of Scotland, S. W. of Argyleshire, between the isles of Islay and Mull, and connected at the S. end with that of Oronsay, from which it is separated at high water only; pop. about 800. Including Oronsay, the length is 12 m., the breadth from 1 to 3 m. A great portion of the soil is well cultivated, producing potatoes and barley; and cattle and sheep of a superior breed abound. The cod fisheries are extensive, and there are two capacious roadsteads and a good quay at Portnafeamin, the harbor of the island. The ruins of a stronghold of the early lords of the isles are situated in the middle of a lake on this island. Colonsay and Oronsay were among the early monastic stations, and next to Iona they contain the most famous remains of religious edifices in the Hebrides.—Little Colonsay, an islet between Staffa and Gometra, affords good pasturage for sheep, but contains few inhabitants.

COLONY (Lat. *colonia*, from *colere*, to cultivate), a word originally applied to a body of people established in a foreign country, whether remaining subject to the government of the mother country, or having an independent government of their own. It is now used as a designation of the territory inhabited by such persons. The Phœnicians first set the example of colonization. Their colonies, established upon the islands of the Mediterranean, and the coasts of Africa and Spain, were founded for the purpose of promoting commerce, but contributed powerfully to the progress of civilization. Carthage, itself a colony of the Tyrians, in turn sent forth colonies in the prosecution of its commerce, which were remarkable for their number rather than for their importance. Her colonies, unlike those of Tyre, remained in political dependence upon the mother country. The Greeks founded colonies upon the coasts of Macedonia, Thrace, and Asia Minor, upon the islands of the Archipelago and the Ionian sea, in Crete, Rhodes, Cyprus, southern Italy, Sicily, and Cyrene, and on even remoter shores of the Mediterranean. The colonies were generally distinguished as Dorian, Ionian, or Æolian, according to the Grecian tribe from which they originated, and soon surpassed even their mother countries in poetry, philosophy, and art. Their prosperity was promoted by political independence. Miletus possessed four ports and more than 100 vessels, and in its turn became a colonizing power. Ephesus, Syracuse, Rhodes, and Cyrene were all rich and powerful cities. In many cases the political institutions of the colonies resembled those of the mother country, but there were some whose institutions were a great improvement upon those which prevailed in Attica and Peloponnesus.—As fast as the Romans extended their conquests they established colonies in the countries conquered, for the purpose of consolidating their power. The Roman colonies were parts of the Roman state, their members retaining all the rights of Roman citizens, including that of *suffragium* or voting, and that of the *honores* or of holding office. Land was assigned to them from the conquered territory. The original inhabitants among whom these colonists were sent, though subjects of Rome, were not Roman citizens in the full meaning of the word. The privileges allowed them varied according to circumstances. After the decline and fall of the Roman power, there were no new colonies established up to the time when Genoa and Venice became powerful states. The Genoese colonies were on the shores of the Hellespont, of the Black sea, and of the sea of Azov. Those of the Venetians were in Candia and Cyprus.—When the discovery of the Cape of Good Hope changed the direction of commerce with the East, the Portuguese established colonies along its route, upon the coasts of Africa and the shores of the Persian gulf. Among their colonies in India were those at Goa, Diu, and Damaun on the Malabar coast, Negapatam on the Coromandel coast, and Malacca. They had also colonies in Java, Sumatra, Celebes, Borneo, and the Spice islands. Upon the annexation of Portugal to Spain, many of the Portuguese colonies passed into the hands of the Spaniards, from whom they were taken by the Dutch. Brazil, the greatest of the Portuguese colonies, declared itself independent in 1822. The more important colonies belonging to Portugal at the present day are the Azores, the islands of Madeira and Porto Santo, the archipelago of Cape Verd, some settlements in Senegambia, Angola (including Benguela, &c.), Congo, Prince's island, Mozambique, Goa, Diu, Macao, Dili, and Kambing.—Spain began to send out colonies after the discovery of the new world. Her first colony was that of Hispaniola (Hayti), which was founded by Columbus in 1492. Those of Cuba, Porto Rico, and Jamaica were next founded. When Mexico was conquered by Cortes (1519–'21), and Peru, Quito, and Chili by Pizarro and his associates, colonies were established in those countries. One of the points kept in view by the Spaniards in the establishments of their colonies was the propagation of the Catholic religion; but the principal object was to secure for Spain the possession of their gold and silver mines, and

the government therefore reserved to itself the exclusive control of commerce with them. Squadrons set sail twice a year from a designated port (at first Seville, afterward Cadiz) for Porto Bello and Vera Cruz, which upon their return voyage brought back treasure to the same port. The interests of the natives were sacrificed to those of the colonists, and those of the latter to the home government. At the same time the interests of the people of Spain were favored by securing them the exclusive right of supplying the colonies with certain European productions, such as wine, hemp, flax, ships, powder, and salt. The practical operation of this system was in the long run unfavorable to Spanish commerce. Its activity was increased upon the removal in 1778 of the restrictions upon it. The colonies on the American continent declared themselves independent early in this century. The more important of those belonging to Spain at the present day are the Philippines, the Mariana and Caroline islands, Ceuta, Peñon de Velez, Melilla, Alhucemas, the Canaries, Cuba, Porto Rico, Mona, Tortugas, and Los Roques. In some of these colonies slavery is still maintained, though the principal Spanish statesmen favor its early extinction.—In combating for its independence the Dutch republic undertook to place its navy in a condition that might enable it to cope with that of Spain. Not satisfied with fighting the Spaniards upon land, the Dutch pursued them on the seas; and after the colonial possessions of the Portuguese passed under Spanish dominion, they attacked the Portuguese and Spanish settlements indiscriminately. The expedition which sailed in 1595, under the command of Cornelis Houtman and De Molinaer, was the first which was sent to the Indies by the Dutch. Early in the 17th century they had deprived the Portuguese of all their settlements in India, with the exception of Goa. In the middle of that century their power was at its height. They obtained exclusive possession of the commerce with Japan, and established a colony at the Cape of Good Hope. The capital of their empire in the East was Batavia, on the island of Java. They had establishments in St. Eustache, in Guiana, and for a time in Brazil. The discovery of New Holland, Carpenter's Land, Van Diemen's Land, and New Zealand was due to them. Their only attempt at colonization in North America was made in the territory discovered by Henry Hudson in 1609, which they called New Netherlands, but which was taken from them by the English in 1664 and named New York. The object of the Dutch in the establishment of their colonies was the promotion of commerce, and their government was confided to trading companies. No attempt was made to change the religion of the people among whom they were founded. Their importance declined with that of the Dutch commerce. Among the more important of those of which Holland still retains possession are the islands of Bonair, Curaçoa, St. Eustache, Saba, half of St. Martin and part of Guiana, Java, Sumatra, Bencoolen, Madura, Celebes, Borneo, the archipelago of Sumbawa, Timor, the Moluccas, and Papua. Slavery was abolished in the Dutch colonies in 1861.—Denmark, under the reign of Christian IV., in 1618 established a colony at Tranquebar on the Coromandel coast, and afterward others upon the coast of Malabar and in Bengal. Trading companies were organized for the management of these enterprises, but they interfered with each other and were abandoned. A new company was organized in 1732, which was more successful. The Danish possessions in India were sold to the English East India company in 1845, and in 1849 the Danish colony in Guinea was sold to Great Britain. Denmark retains the colonies of St. Thomas, St. John, and St. Croix in the West Indies; and Danish merchants have a trading station, with the encouragement of the government, in Greenland. The island of St. Bartholomew belongs to Sweden.—Austria founded the Ostend company in 1722, for the purpose of opening commerce with the East Indies, but has never accomplished anything of importance in the way of colonization.—The policy of colonization was introduced and maintained in France by Richelieu and Colbert. Possession was obtained of Canada, Acadia, of part of Newfoundland, Hayti, Martinique, Guadeloupe, St. Lucia, Grenada, and Cayenne. A factory was established by the French East India company at Pondicherry, and colonies were founded upon the isles of France and Bourbon. At the beginning of the 18th century the French colonies in the different quarters of the world were in a flourishing condition. The French settlements in the East, while Dupleix was governor at Pondicherry, had at their command large fleets and were strong and successful; but under the reign of Louis XV. the French colonies did not receive adequate protection from the home government, and they fell one after another into the power of other countries. France was deprived of her settlements in Newfoundland by the British in 1713, and surrendered Canada, Cape Breton, and some of the West India islands at the close of the seven years' war in 1763. She lost Hayti by revolt during the revolution. Louisiana was ceded to Spain, afterward resumed by France, and then sold (1803) to the United States. But in more recent times French colonies have begun again to acquire importance. The colony which was founded in Algeria in 1830 is the most important one which ever belonged to her. Under Napoleon III. particular attention was paid to the French colonies in the East. Establishments were made upon the islands of New Caledonia and of Pines, at Saigon in Cochin China, in Senegambia, and elsewhere. Among the most important colonies of France at the present day are Algeria, Cochin China, Réunion, Martinique, Guadeloupe, Senegal, Pondicherry, St. Pierre and

Miquelon, Cayenne, Tahiti, New Caledonia, and the settlement on the Gaboon.—England began to establish colonies under Queen Elizabeth. They were sent chiefly toward the East, where they came in conflict with the establishments which had been previously founded by the Portuguese and the Dutch. In 1623 the English were driven from the islands which they had occupied, and confined to their settlements at Madras and on the Coromandel and Malabar coasts. The English colonies in India were under the administration of the East India company, which received its charter from Queen Elizabeth Dec. 31, 1600. Its charter was renewed, and a new company was chartered with similar powers. These companies were afterward united, and their union was ratified by act of parliament in 1708. The East India company was secured in the enjoyment of all benefits directly obtained from the English colonization of India. (See East India Companies.) The British colonization of North America was conducted upon different principles. Though the settlement made at Jamestown in 1607 was a matter of private enterprise, it was taken under the protection of the British government in 1624. Neither that colony nor the one planted by the Puritans in New England in 1620 was ever subjected to the exclusive control of a privileged trading company. The great success attained by the colonies in America which threw off their allegiance to Great Britain, tended to show that the prosperity and development of a colony is promoted by the absence of control and regulation on the part of the mother country. This principle has been introduced into the British colonial system, and although the particular forms of administration vary in the different colonies, they are in general encouraged as far as possible to provide for their own government. Compulsory transportation to remote colonies was long a means adopted by the British government for the punishment of criminals. James I. in 1619 authorized the sending of 100 dissolute persons to Virginia; and the practice was continued afterward. It was found that the criminals were gradually absorbed into society, and the working of the system was upon the whole satisfactory. But a similar success never attended the transportation for crime to Australia, which took the place of that to America; and the system was finally abandoned in 1857. The British colonies and foreign possessions at the present day are India, Ceylon, the Straits Settlements, Hong Kong, Mauritius, Aden, St. Helena, Ascension, Cape Colony, Natal, the Gold Coast, Sierra Leone, Gambia, Australia, Tasmania, New Zealand, Labuan, Sarawak, Malta, Gibraltar, Heligoland, the Dominion of Canada, Newfoundland, Labrador, British Honduras, British Guiana, the Bermudas, the Bahamas, the Leeward islands, Jamaica, St. Lucia, St. Vincent, Barbadoes, Grenada, Tobago, Trinidad, Falkland islands, and several small islands in the Pacific and Indian oceans.—The course of proceeding which is followed by the United States in reference to the settlement of unoccupied territory is a system of colonization. The land is granted to actual settlers gratuitously, or on favorable terms, and the territory is governed by the United States until its population reaches a number sufficient to form a state, when the territory is admitted into the Union on an equal footing with the other states.

COLOPHON, one of the twelve Ionian cities on the coast of Asia Minor, situated about 9 m. N. W. of Ephesus on the banks of the Halesus, a small stream, famed for the coldness of its waters. It was 2 m. from the coast, on which, however, it had a port, named Notium. The city and the port were connected by long walls. It suffered much from the Lydian king Gyges, from the Persians during the Peloponnesian war, and afterward from Lysimachus, king of Thrace. The name Colophon was finally transferred to Notium. Only a few miserable cabins now mark its site. Colophon, according to Strabo, was celebrated both for its navy and its cavalry; indeed, the latter was so efficient, that it was said to carry victory wherever it went. Livy tells us that it was one of the cities honored by the Romans with exemption from taxation. It was one of the seven cities which claimed the honor of having given birth to Homer. Mimnermus and Hermesianax the elegiac poets, Polymnestus the musician, Antimachus, Xenophanes, and Nicander were born there.

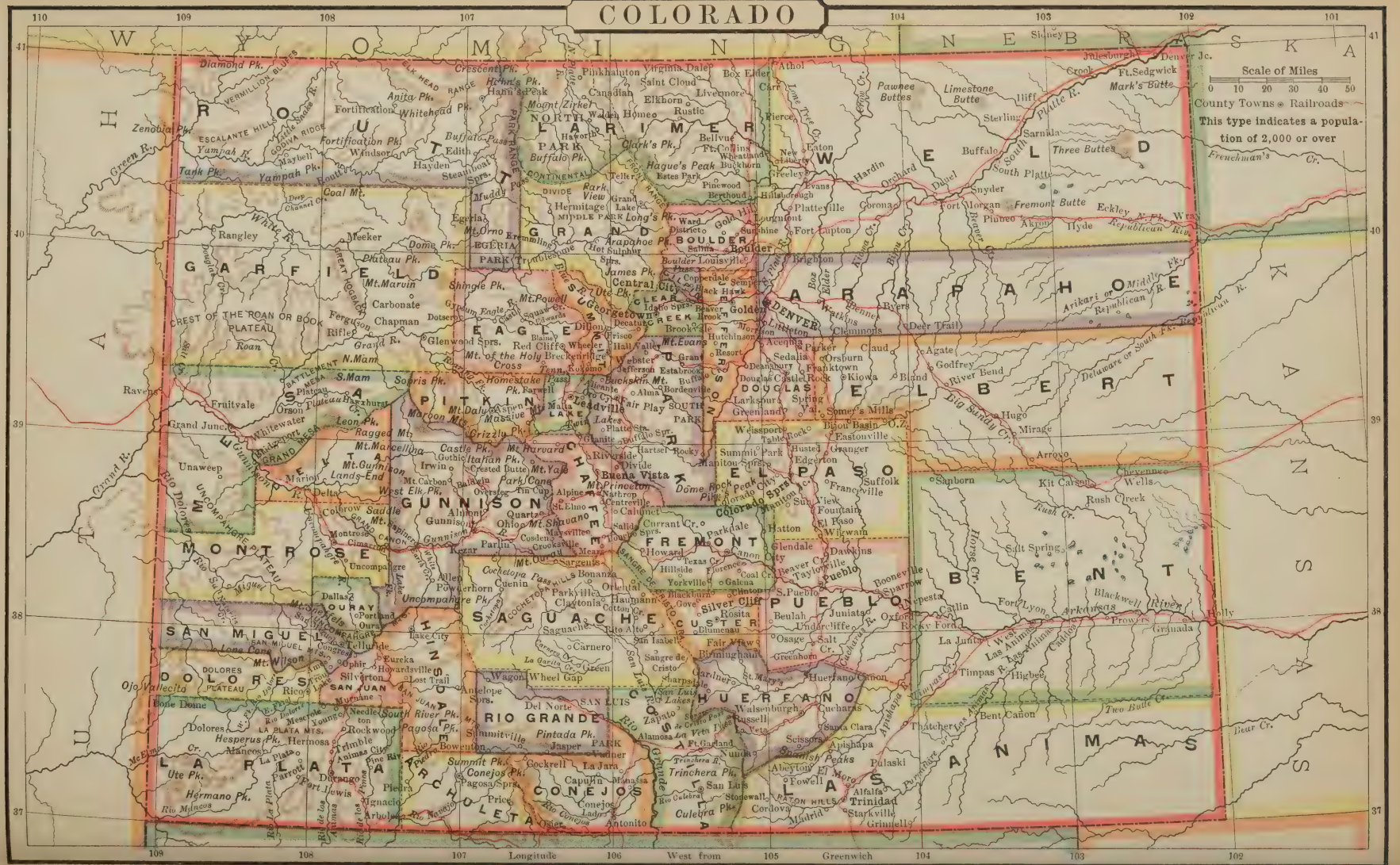
COLOR, one of those simple and obvious qualities of physical objects, as perceived by us, which can only be defined by its synonymes, hue, dye, &c., or by some theory respecting the nature of light, of bodies, or of vision, but the mode of manifestation or production of which is far from being equally obvious. The color of healthy arterial blood in the higher animals is always florid red; that of pure sky or air, blue; that of most growing leaves, some shade of green. Many chemical compounds are known by certain colors, but by heat or other agencies these colors are often changed. The colors of certain paints and dyes are to a certain degree permanent, but by exposure to light and air they undergo a gradual change. Probably no colors are absolutely permanent, but those thus named are each so during a certain condition of the substance to which it belongs. Other colors, as those shown by a diamond cut in certain forms, or by a prism, those of mother-of-pearl, of the plumage of birds, and of soap bubbles, depend on some accident of form or size of bodies, or of the structure of their surfaces, and these change with the position of the observer; hence these are known as variable colors. When white or solar light is transmitted through triangular prisms of glass, or other media differing in dispersive power from the air, the beam or ray of white is analyzed, being separated into the seven primary colors, red,

orange, yellow, green, blue, indigo, and violet. The proof that these are the elements of white light was first furnished by the experiments of Sir Isaac Newton, in 1672. It must be added, however, that between any two of the simple colors of the spectrum there is a gradual interchange of hue, so that in fact the different colored rays existing in and obtainable from the white ray are not seven, but indefinite in number. The same sensible hue of certain colors which, when found in the spectrum, cannot be further decomposed, can always be separated by the prism when found in natural objects, giving two or more, but not all of the spectral colors; that is, the colors of natural objects are always compound. Light from white paper gives a complete spectrum; from yellow, a fragment of a spectrum, showing the yellow space bright, with some green and orange, sometimes a faint tinge additionally of blue and red; blue paper gives a whole spectrum, less the orange and red; and so of others. The light of the purest yellow flower, analyzed, shows also some green and orange. On account of the impossibility of obtaining pure pigments, a colored solution or glass transmits not only the rays that make up its own color, but other colors that in the spectrum are neighboring to these. Light coming through a blue glass is found to contain a strong blue element, feebler green and indigo, and still feebler yellow and violet. Looking through the blue glass at a spectrum, the same colors are seen, and in corresponding degrees of vividness. The blue medium passes through itself also the closely related rays, but it extinguishes or cuts off the more distant. Bodies vary in color with their mechanical division. Light when reflected from the surface of gold is yellow, and when transmitted through thin leaves of this metal is green; but when gold is reduced to a fine powder and suspended in water, the mixture will transmit, according to the state of division, blue, purple, or ruby light, as was shown by Faraday. Finely divided sulphur ordinarily transmits red light, but on precipitating it from a solution of sulphydric acid, and adding sesquichloride of iron, the liquid will for a short time transmit purple light. By decomposing sulphydric acid in solution with heat, the water holding the suspended sulphur appears blue. The theory now commonly received is that proposed by Sir David Brewster, namely, that when a body appears permanently of any given color, simple or compound, it is because it absorbs the remaining colors of the spectrum, *i. e.*, of the complete or white ray, and reflects those which constitute the color of which it appears. Thus a scarlet flower is a body having such relations to light that it absorbs violet, blue, &c., reflecting only certain proportions of red, orange, and yellow. In this view, bodies, as snow and milk, appear white when they reflect or transmit entire or white light; others, as certain inks and coal, appear black, because they absorb all the colored rays in the proportions which form white light. But as all bodies both absorb and reflect in some degree, the proportion of light which white bodies absorb and black bodies reflect is also a mixture of the various colors in the proportions forming white. To prove that the most intensely black body still reflects some light, look through a long narrow tube into a room completely darkened; this may be considered as presenting before the eye an absolutely black spot. Let a piece of coal or black velvet be brought against the inner end of the tube; the body is at once visible, as something differing clearly from the black space. Oersted separated the light coming from bodies into two parts. First, he found that all bodies have in some degree the property of mirrors, but that in those not polished the light is reflected from so many small surfaces in various directions that no image is produced. Secondly, he found that illuminated bodies gave out another portion of light not reflected, which had the proper color of the bodies themselves. A beam of light, in passing through certain media, or in being reflected from a surface at a certain angle, has all its vibrations reduced to a common plane, and is then said to be polarized. (See Light.) Arago proved that from illuminated unpolished bodies a small and usually imperceptible amount of light having the color of the luminary is returned to the eye, and that this light is polarized by reflection; while much the larger portion of their light, having the color of which the body is seen, is polarized by refraction, and hence must have come from beneath the surface of the bodies emitting it. A theory long since proposed in substance by Euler is explained at length in his "Letters to a German Princess." Two viols or other stringed instruments being attuned in unison, though many feet apart, if a string of one be made to give out a musical sound, the corresponding string of the other, being fitted to vibrate in the same times, takes up the vibrations from the air, and actually emits the same sound, or some chord of that sound. The first induces vibrations in the second; the second reciprocates the vibrations of the first; but the conditions of the second must first be suitable. In this view, when sunlight falls upon various bodies, it induces (according to the undulatory theory, by the communication of agitation from the ethereal medium to the molecules of the bodies) a luminous condition or power in the illuminated body, but which in most bodies remains only so long as the action of the original luminary is exerted upon them. But though the body receives the whole impulsion of white light, it will in turn reproduce the whole, or such part as the condition of its molecules fits it for reciprocating. If it reciprocate all the colored rays in due proportion, and in considerable amount, it will be white; if in like proportion, but in almost imperceptible amount, it will be called black. If a body re-

ciprocate mainly the blue and allied rays, it will be some shade of blue; and so of all colors. Moreover, whatever rays the molecular condition of the body forbids it to reciprocate, it will of necessity extinguish; but as force can no more be destroyed than matter, this extinguished light is not lost, but becomes manifest again as heat in the body receiving the rays, or perhaps in certain circumstances as affinity or electricity. According to Brewster's theory, a body is exactly of the color which it rejects, or does not possess; according to Euler's, the body is of the color it shows, and color is not a quality of light merely, but a secondary physical quality of bodies, due to a primary mechanical one. Thus a white body, as a screen, can respond to any color thrown upon it; but a colored body can only respond to rays within a certain limit, and if it receive rays only of colors beyond this limit, it must appear black. In the undulatory theory, as now received by the highest authorities in physics, there is assumed to be a fixed and invariable connection between the color of a given ray and its refrangibility; and the latter again depends on its rate and time of vibration. Thus, as calculated by Dr. Young, the middle red ray has a wave length of $\frac{1}{39,180}$ of an inch, and corresponds to 477 millions of millions of pulsations per second of the ether, or of the retina; while the middle violet has a wave length of $\frac{1}{57,490}$ of an inch, and corresponds to 699 millions of millions of pulsations per second; the other colors having wave lengths intermediate to these. Sir David Brewster, however, who set out with a partiality for the now exploded corpuscular theory, examined the spectrum with variously colored glasses, and declared that he detected some red, yellow, and blue in all parts of it. He accordingly proposed a theory of white light as composed of three elementary colors only, those just named; each color having all the various degrees of refrangibility, and the other colors being mixtures of these three. Helmholtz has shown that many of Brewster's results were due to using imperfect prisms, and that when these sources of error are in a high degree removed, the mixture of rays through the spectrum fails to appear.—*Complementary Colors.* Solar or white light being regarded as a whole produced by the union of many elements (colors), it is plain that any portion of these elements being blended to form a composite hue, the remainder will form by mixture some other hue; and either of these being added to the other, the result will be the reproducing of complete or white light. In mathematical language, that which by addition to any part completes it, or makes a whole, is termed a complement. Transferring the mathematical conception to light, any hue, simple or compound, so related to another that by blending it produces with the latter white light, is termed its complementary color, and *vice versa.* Suppose the four higher prismatic colors blended; their dominant hue is blue. If now the three lower colors, red, orange, and yellow, be mingled in a separate hue, this will be an orange-red. But this combined with the compound blue just named must produce complete or white light. Hence, in the particular hues of each thus obtained, blue and orange-red are complementary; but there may be many slight variations of these hues which shall go by the same names, and yet not be exact complements, the result of their mixture being then a white tinged with whatever color happens to be in excess; *i. e.*, a light tint of that color. All the colors but yellow and green being blended give a hue of violet-red; and of this the yellow-green is complementary. If one of the compound hues be varied by the incorporation of more of a certain element, the other must lose an equivalent of the same element. If the yellow-green be moved toward green by adding blue, the violet-red, in order still to be complementary, must be moved toward red, by losing the same amount of blue as the other gains. If one of the hues be, irrespective of light or shade, increased in intensity, the other must also be made more intense; since, if the relative quantities of each color existing in the normal spectrum be not maintained, an uncompensated portion of one or more colors must remain. The following pairs of colors are complementary to each other: Red—bluish-green; orange—blue (azure); yellow—indigo; green—reddish-violet; blue—orange-red; indigo—orange-yellow; violet—yellow-green. M. Chevreul, superintendent of the dyeing department of the Gobelins manufactory, constructed a chart of 24 hues, each shown in 24 different tones, and so arranged that not only the composition and relations, but also the complementary color of each of these, are obvious at a glance.—*Subjective or Accidental Colors.* Place on a sheet of white paper a red wafer, and look on it intently for some seconds; move the wafer suddenly away, and in its place is seen a bluish-green spot of sensibly the same size. After looking at an orange wafer an azure image will appear; indigo will follow yellow, and violet succeed yellowish green, and the reverse. The color of the image is in all cases complementary to that of the original object. If small objects of any colors be well illuminated and viewed on a black ground, the complementary image is seen upon closing the eyes. Under the same circumstances, a white object will give a black image. The color thus following upon the contemplation of its complement has been termed accidental, and also, from the fact that it arises from some state produced within the visual organ itself, subjective. A complete account of the ordinary phenomenon may be summed up thus: The color of the object itself grows gradually more faint, as it is viewed; after the cessation of the direct action of the object on the retina, there is, 1st, the persistence for about $\frac{1}{10}$ of a second of the primitive

impression; 2d, the appearance of the accidental image; 3d, the permanence for a longer or shorter period of the latter, its intensity and duration depending on the intensity and time of the direct impression, while the color gradually fades and then gives place to others; or if the eyes be successively opened and shut, or directed to light and dark surfaces in turn, a succession of appearances and disappearances of the image, usually attended with changes of its color. Any one may witness these curious results by taking a momentary glance at the sun or a candle flame, or looking steadfastly on a strongly lighted colored object, and then proceeding as already indicated. The subjective color obtained from the red sun of morning or evening will be a hue of green, passing, if the eyes be kept closed, gradually to darker hues, as blue and violet, or restored to red by looking momentarily on a white surface, and then followed by green on closing the eyes; that obtained from the yellowish-white sun of midday will be indigo or violet. In either case, if the eyes are turned at once to a white surface, the image at first appears of its darkest color, passing successively through the lighter colors to white; and whatever color appears when the eyes are closed, its complementary is seen when they are fixed on a white surface. Place, again, any small colored object upon a white surface, and look on it for some time: colors will be seen to develop themselves about the edges of the object, the color being in each case the complement of that of the object, bluish green surrounding red, and so on. The general explanation of these phenomena is, that the retina, having been once impressed with any color, gradually loses its sensibility to that color, and acquires a disposition to be affected by its complementary; and that this tendency is manifested both successively, or in time, and simultaneously, or in space. M. Scherffer considers that the continued or powerful action of certain colored rays enfeebles or fatigues the sensibility of the retina to those rays; so that when the eye afterward receives white light, it is affected for a time by the other or complementary rays only. M. Plateau explains both the persistence of the original, and the appearance and changes of the successive accidental colors, by supposing these changes to constitute the transition in time of a portion of the retina from an excited to its normal state; while irradiation and the simultaneous accidental color constitute a similar transition in space, or from the actually excited portion of the retina to that which is in repose. When we look continuously on any color, as red, this color loses its vividness and beauty, because a color the opposite of red is excited in the eye, and blends with it; but its complementary, or any color near to this, as green, being now presented, the latter is at once improved, rendered more pure and vivid, by the acquired tendency of the eye to see that color. This is successive contrast; and it is thus shown that colors which will harmonize, or affect the eye agreeably, and be mutually improved, by being viewed in succession, are opposites or complements of each other. Colors nearly allied will be injured when thus beheld, and will affect the eye unfavorably. A purchaser who is shown in succession several pieces of bright red cloth will pronounce those last seen to be much inferior in brightness and beauty of color to the first; but if his attention be now directed to green stuffs, he will declare these extremely bright; and after them will see red stuffs quite as favorably. Again, two hues of red or blue seen side by side are not improved, because the impression made by either tends to excite an impression of green or orange in its neighborhood, which impression blends with the actual color of the other piece, and impairs it. But if blue and orange strips be viewed side by side, the blue throws orange upon the orange, and *vice versa*, so that the brilliancy and purity of both colors are improved. This effect constitutes simultaneous contrast; and it shows that harmony in colors viewed at once and near to each other also requires that these should be, or approach to, complementaries of each other. If different tones be associated, the effect is always to make the tinted appear lighter, and the shaded darker, than it really is. This is easily shown by placing side by side several gray strips, passing gradually from quite light to dark; although the shade of each strip is homogeneous, yet its side toward a darker strip will appear to be the lighter, and that toward a lighter strip the darker. Chevreul's law, both for hues and tones, deduced from facts such as those now stated, may be thus expressed: "When the eye sees at the same time two contiguous colors, they will appear as dissimilar as possible, both in optical composition and in height of tone. Guided by this principle, the juxtaposition of colors in painting, in dress, in furniture, in the planning of gardens, in bouquets, and indeed wherever colors are employed with a view to artistic effect, ceases to be a matter of accident or an ill-understood experience, and becomes a subject for the rules and predictions of science. In all chromatic arrangements, harmonies of contrast are first to be sought. But as these are limited, harmonies of analogy are also called into requisition, with less striking, but often with very pleasing results. These may be secured in three ways: by arranging different tones in a series; by associating nearly related hues of a like tone, except where these, as blue and violet, distinctly injure each other; and by viewing appropriate groupings of colors by colored light, as that from a stained window, which modifies them all in a particular direction. The effect of the contiguity of white is to deepen all hues in whatever tone, unless it may be a light yellow; but with the deeper hues and tones, the contrast with white is generally too violent. Black accords well with almost any hue or tone, except that the deeper, as indigo or violet, render

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COLORADO
Scale of Miles
0 10 20 30 40 50
County Towns ⊙ Railroads
This type indicates a population of 2,000 or over
Longitude West from Greenwich
110 109 108 107 106 105 104 103 102 101
41 40 39 38 37
WYOMING
NEBRASKA
UTAH
NEW MEXICO
KANSAS
ROUTT
JACKSON
GRAND
BOULDER
WELD
LARIMER
GARFIELD
EAGLE
ARAPAHOE
PITKIN
DENVER
ADAMS
LINCOLN
ELBERT
DOUGLAS
GUNNISON
CHAFFEE
EL PASO
MONTROSE
FREMONT
PUEBLO
BENT
OURAY
SAGUACHE
CUSTER
SAN MIGUEL
HUERFANO
DOLORES
SAN JUAN
RIO GRANDE
LAS ANIMAS
LA PLATA
CONEJOS
ALAMOSA
Denver Jc.
Julesburg
Sidney
Ft. Sedgwick
Crook
Mark's Butte
Limestone Butte
Pawnee Buttes
Three Buttes
Sterling
Platteville
Greeley
Evans
Brighton
Fort Morgan
Fremont Butte
Eckley
Wray
Republican Riv.
Arikari or Middle Fk.
Republican R.
Frenchman's Cr.
Denver
Golden
Boulder
Longmont
Fort Lupton
Colorado Springs
Manitou Springs
Pikes Peak
Cheyenne Wells
Kit Carson
Rush Creek
Arroyo
Mirage
Hugo
Agate
Godfrey
River Bend
Big Sandy Cr.
Delaware or South Fk.
Arkansas R.
Salt Spring
Fort Lyon
Arkansas River
Holly
Granada
Prowers
Las Animas
Timpas R.
Higbee
Two Butte Cr.
Bear Cr.
Bent Canon
Thatcher's Arroyo
Trinidad
Starkville
Grimnells
Alfalfa
Fowell
Aguilar
Cordova
Stonewall
Spanish Peaks
Apishapa
Pulaski
Scissors
Santa Clara
Cucharas
Huerfano Canon
Walsenburg
Russell
Timpas
Rio Grande
Del Norte
Summitville
Pintada Pk.
Jasper
Wagon Wheel Gap
Antelope Sprs.
Creede
Rico
Silverton
Howardsville
Lost Trail
Ophir
Telluride
Lake City
Ouray
Portland
Dallas
Uncompahgre Pk.
Uncompahgre R.
Cimarron
Montrose
Delta
Colorow Saddle
Grand Canon
Gunnison
Almont
Quartz
Ohio
Mt. Shavano
Maysville
Crookville
Cochetopa Pass
Cochetopa Creek
Saguache
Tato Alto
San Isabel
Carnero
Green
Sangre de Cristo
Blumenau
Fair View
Birmingham
Greenhorn
Silver Cliff
Rosita
Beulah
Juniata
Oxford
Rocky Ford
Boone
Sparrow
Pueblo
Colorado City
Fountain
Fountain Creek
Security
Widefield
Edgerton
Husted
Granger
Summit
Manitou
Divide
Buena Vista
Princeton
Alpine
Nathrop
Centreville
Salida
Currant Cr.
Howard
Parkdale
Texas Cr.
Florence
Coal Cr.
Hillside
Yorkville
Galena
Canon City
Dawkins
Wigwam
Glendale
Batton
Sun View
Francville
Suffolk
Sanborn
Chico
Rush Cr.
Wilson Cr.
Mt. Harvard
Mt. Yale
Mt. Princeton
Mt. Antero
Mt. Shavano
Mt. Ouray
Mt. Wilson
Mt. Sneffels
Mt. Guyot
Mt. Lincoln
Mt. Evans
Mt. Bross
Mt. Democrat
Mt. Sherman
Mt. Silverheels
Mt. Lincoln
Mt. Bancroft
Mt. Buckskin
Mt. Bross
Mt. Lincoln
Mt. Evans
Mt. Democrat
Mt. Sherman
Mt. Silverheels

it apparently gray and faded.—The reader is referred to M. Chevreul's work on this subject, or to Prof. Youmans's "Household Science," for full details in relation to the arrangement or matching of colors. A few examples may be given. Thus, to trim orange articles of dress with yellow, to bring violet and deep blue flowers into juxtaposition, to upholster mahogany chairs with crimson or dark orange stuffs, without an intervening band of black or green, or to place heavy gilt frames near to strong red or orange in a picture, is a violation of chromatic harmony. Black and dark colors diminish, white and lighter tones enlarge, the apparent size of the wearer. Large figures or horizontal stripes shorten, while narrow vertical stripes heighten, the apparent stature. All colors in the vicinity of the face influence the complexion, as already explained. Hues and tones of green improve a pale or blonde complexion, by throwing on it their complement of rose; while orange throws blue on the too abundant orange of the brunette complexion, and blending with the latter produces a whitening effect. Light or tinted colors agree best with light, deep or shaded colors with dark complexions. Carpets, paper hangings, curtains, and furniture for rooms should be of colors chosen with reference both to their effects upon each other, and upon the complexions of the inmates. The beauty of red flowers is heightened by the neighborhood of green foliage; and in the hues of flowers it is easily observed that chromatic discords are seldom met with. The association of a yellow or orange pollen with a violet, purple, or blue corolla is familiar. An eye delicately susceptible to colors will note also the frequent examples of modification of color by contrast, that come under daily observation. Thus an orange-red sunset appears heightened to bright scarlet when seen through openings in green foliage; narrow bands of gray clouds moving over such a sky appear of a rich light or olive green; and at a later hour, when the distant forest is simply black, it appears bordered at the top with a vivid green from the same cause. One who looks intently at a bright horizon will see after some seconds a dark curtain appear to drop down to near the horizon, while between this and the earth a brightened band of sky of changing width will be visible. The colors of thin plates and films, as mica, mother-of-pearl, and soap bubbles, and similar phenomena, are treated of in the article LIGHT.

COLORADO, a territory of the United States, bounded N. by Wyoming territory and Nebraska, E. by Nebraska and Kansas, S. by the Indian territory and New Mexico, and W. by Utah. It is situated between lat. 37° and 41° N., and lon. 102° and 109° W., forming nearly a parallelogram; average length E. and W., 380 m.; breadth N. and S., 280 m.; area, 104,500 sq. m. It is divided into 21 counties: Arapahoe, Bent, Boulder, Clear Creek, Conejos, Costilla, Douglas, El Paso, Fremont, Gilpin, Greenwood, Huerfano, Jefferson, Lake, Larimer, Las Animas, Park, Pueblo, Saguache, Summit, and Weld. The principal cities and towns are: Denver, the capital and chief city, in Arapahoe co., pop. in 1870, 4,759; Central City, 2,360, and Black Hawk, 1,068, in Gilpin co.; and Georgetown, Pueblo, Golden City, Trinidad, Greeley, Kit Carson, Boulder City, Cañon City, and Colorado City, with populations less than 1,000. According to the United States census, the population in 1860 was 34,277; in 1870, 39,864, which included 456 colored persons, 7 Chinese, and 180 Indians. The tribal Indians of Colorado are the Tabequache band of Utes, at the Los Pinos agency, numbering 3,000 in 1872, and the Yampa, Grand River, and Uintah bands of the White River agency, numbering 800. They have a reservation of 14,784,000 acres, extending from the S. boundary of the territory to 15 m. N. of the 40th parallel, and from the 107th meridian to the W. boundary. The White River agency, on the river of that name, is in the N. part of the reservation; the Los Pinos agency is in the S. E. part. These agencies are under the charge of the Unitarians. At the White River agency there is a school attended by 40 scholars. These Indians receive annuities in goods, clothing, &c., of $40,000, and a like sum in subsistence. There are also a few Indians roaming in the E. part of the territory. Colorado ranks fourth among the territories in point of population. The number of male citizens of the United States in 1870, 21 years old and over, was 15,515. Of the total population, 24,820 were males and 15,044 females; and 33,265 were native and 6,599 foreign born. Of the natives, 6,344 were born in the territory, 8,378 in New Mexico, 1,812 in Illinois, 809 in Indiana, 1,310 in Iowa, 1,704 in Missouri, 621 in Massachusetts, 2,778 in New York, 2,057 in Ohio, and 1,552 in Pennsylvania; of the foreigners, 1,685 were born in Ireland, 1,456 in Germany, 1,358 in England, and 753 in British America; and 1,235 persons born in the territory were living in other states and territories. The number of families was 9,358; of dwellings, 10,009. There were 6,297 persons 10 years old and upward unable to read; 6,823 were unable to write, of whom 255 were foreigners, and 2,368 were males and 2,122 females 21 years old and over. There were 26 blind persons, 4 deaf and dumb, 12 insane, and 3 idiotic. The homicides during the year were 37, 4 of which were by Indians. There were 6,462 engaged in agriculture, 3,625 in professional and personal services, 4,681 in manufactures and mechanical and mining industries, and 2,815 in trade and transportation. —Colorado has three natural divisions: the mountain range, including the park system, the foot hills, and the plains. The territory is intersected N. and S. near the centre by the Rocky mountains, which here attain their greatest elevation, 200 peaks nearly 13,000 ft. high and about 25 of 14,000 ft. and over being visible from Mt. Lincoln. Between lat. 38° 30′ and 40° 30′ the chain is about 120 m. broad,

consisting of three parallel ranges running nearly N. N. W. The E. one, called the Front or Colorado range, as seen from Denver, appears to rise abruptly from the plain, stretching with snow-capped summits from Pike's peak on the south to a group 20 m. N. of Long's peak, a distance of 120 m. Six of its peaks are from 14,000 to 14,200 ft. above the sea, viz.: Long's peak, Mt. Torrey, Gray's peak, Mt. Rosa, Mt. Evans, and Pike's peak. W. of this range lie the parks, separated from each other by comparatively low or broken cross ridges; and parallel with it and about 40 m. further W. is the Park range, forming the W. boundary of North, Middle, and South parks. Its highest points are in the Mt. Lincoln group, near the dividing ridge between South and Middle parks; 20 peaks exceed 13,000 ft. in height, and Mt. Lincoln and Quandary peak rise above 14,000 ft. The Blue River group lies 20 m. N., having many peaks of 13,000 ft., and the culminating points reaching 13,300 ft. The northernmost and highest summit is Mt. Powell, beyond which there are no high peaks to North park; opposite this an altitude of 12,000 ft. and over is attained. W. of the S. part of the Park range is the Arkansas valley, and beyond this is the National range, also called the Sawatch range or Sierra Madre, dividing through nearly its whole extent the waters of the Atlantic from those of the Pacific. It is parallel with and about 16 m. W. of the Park range, terminating some 40 m. N. W. of Mt. Lincoln in the mount of the Holy Cross, about 13,400 ft. high. The highest part of this range commences in Grand mountain, about 14,200 ft. above the sea, 20 m. S. of the Holy Cross, whence for 50 m. further S. the whole range is 13,000 ft. high, with 10 peaks rising at intervals of from 5 to 8 m. to a height of from 14,000 to 14,400 ft. The principal summits are Mts. Elbert, La Plata, Harvard, and Yale. W. of the National range and connected with it are the Elk mountains, lying between the Grand river on the north and the Gunnison on the south. The most elevated peaks form a ridge about 30 m. long, nearly parallel with the National range and 35 m. W. of it. At the N. end of this ridge, in lat. 39° 15′, is Mt. Sopris, 13,000 ft. high, S. of which are the Capitol (14,100 ft.), the White House (14,050 ft.), and Maroon mountain and Castle peak, each 14,000 ft. high. W. of this group there are no high mountains, the ridges changing within 20 m. to plateaus, which fall off to the Colorado river. The "timber line" of the ranges, the highest point at which timber grows, is determined by the lying snow, and varies from 11,000 to 12,000 ft. On the E. side of the mountains and parallel thereto, extending from the Black hills on the north to the Wet mountains on the south, are the foot hills, having an average elevation of 8,000 ft. The Wet mountains branch out from the main range S. of Pike's peak, and extend in a S. E. direction to the Huerfano river. Between the Huerfano and Purgatory rivers are the Spanish peaks, an independent series of mountain cones. The Raton mountains, running in an E. direction from the main range, form the S. base of Colorado. W. of the main range, in the S. portion of the territory, the Sierra San Juan extends nearly N. and S., forming the W. wall of San Luis park. The Rio Grande forms the N. and E. limit of this range. The Sierra la Plata, also S. of the Rio Grande, extends W. from the San Juan range to the S. W. boundary. The S. W. portion of Colorado is traversed by the Uncompahgre mountains, extending W. from the Sawatch range, and forming the divide between the Rio Grande and the principal southern tributaries of the Colorado. The Sierra San Miguel forms the extreme S. W. portion of the series of ranges extending W. from the main range in southern Colorado. The Roan or Book mountains are near the W. limits of the N. portion of the territory, between the White and Grand rivers. The N. W. corner is occupied by the Sierra Escalante. The "plains" constitute the geographical division of Colorado E. of the mountain belt, and embrace more than one third of the entire territory. The surface of this section is not one continuous level, but a series of valleys separated by ridges and traversed by innumerable watercourses. The average elevation above tide water is about 6,000 ft. The most prominent feature of this vast plateau is the "divide," an elevation reaching a height of 7,500 ft. above the sea level, which separates the waters of the South Platte and Arkansas, and supplies many of their affluents. It branches out from the foot hills N. of Pike's peak, and gradually slopes N., S., and E. into the general level of the plains. The numerous swift streams, having their sources in elevated regions and flowing in various directions, render irrigation practicable, except in the E. central portion of the plains, where the streams are too remote.—The most remarkable physical characteristic of Colorado is its park system. The parks consist of extensive irregular plateaus or basins shut in on all sides by lofty mountain ranges. The surface of these plateaus is diversified by numerous hills or ridges and valleys, containing streams which form the head waters of all the great rivers that rise in Colorado. These valleys are clothed with luxuriant grasses and flowering plants of various species, and possess an extremely fertile soil. The hills are covered with dense forests of pine, abounding in game, such as the bear, elk, and deer. The beds of the streams furnish many varieties of minerals and fossils, and afford a remarkable field for geological investigations. Mineral springs, with waters possessing rare medicinal properties, are numerous, while salt and coal beds seem to underlie the entire surface. The four principal parks are in the central portion of the territory, and constitute the greatest part of a belt running N. and S. between lon. 105°

30′ and 106° 30′ W. The most northerly is North park, which embraces an area of about 2,500 sq. m., and has an elevation of nearly 9,000 ft. above the level of the sea. It is traversed by affluents of the north fork of the Platte, which unite near its N. limits, and flow N. beyond the borders of Colorado. Next to this, on the south, and separated from it by mountain spurs, is Middle park, walled in by the Front range of the Rocky mountains on the E., and on the W. by the Park mountains. It embraces an area of about 3,000 sq. m., extending about 65 m. N. and S. and 45 m. E. and W., and is also about 9,000 ft. high. The streams, most of which flow in a S. W. direction, are all tributaries of the Grand. On a tributary of this river, about 12 m. from the S. boundary of the park, are the hot sulphur springs, whose valuable medicinal qualities have attracted the attention of invalids and tourists. S. of Middle park, on the E. side of the Park range, is South park, embracing within its rocky barriers about 2,200 sq. m., the greater portion of which is adapted to agriculture, and nearly all of which affords excellent pasture lands. The maximum elevation above the sea is 10,000 ft., while the average elevation is about 9,000 ft. The streams, which are supplied by melting snows from the surrounding mountains, are tributaries of the South Platte, and flow E. through the park to the plains. The largest of these parks is San Luis, which has an area not less than that of the other three combined. It lies S. of South park, from which it is separated by the main range, which forms its N. and E. boundary, while its W. boundary is formed by the Sierra San Juan. Its highest elevation does not exceed 7,000 ft., which, with its southern location and mild climate, makes it well adapted to agriculture. The park is watered by the Rio Grande and its numerous tributaries, which flow in a southerly direction, and afford abundant water power. Other smaller parks, presenting similar features, are scattered through the mountains W. of the main range. Of this vast region little is known.

—The river system of Colorado embraces the principal tributaries of the Rio Colorado, Rio Grande, Arkansas, Platte, and Smoky Hill and Republican forks of the Kansas. The Arkansas rises at the base of Mt. Lincoln, on the W. slope of the Rocky mountains, flows S. E. along the base of the range, W. and S. W. of South park, and, in a deep cañon, passes through the range at Cañon City, whence it continues across the plains in a S. E. direction. It traverses in Colorado a distance of about 500 m., no part of which is navigable. Its principal tributaries on the south are: the Greenhorn, which rises in the Wet mountains, flows N. E., and joins the main river a few miles E. of Pueblo; the Huerfano and its branch, the Cuchara, which unite about 18 m. from the Arkansas; the Apisha, which rises in the Spanish peaks, and flows into the Arkansas about midway between Pueblo and Fort Lyon; the Purgatory, which rises from the S. and W. declivities of the Spanish peaks and the N. slopes of the Raton mountains, and flows in an E. and N. E. direction; and the Cimarron, which rises on the S. slope of the Raton mountains, flows E. to the S. E. corner of the territory, and reaches the Arkansas in the Indian territory. The principal northern tributaries of the Arkansas are Fontaine qui Bout, which flows in a S. direction from the N. base of Pike's peak, near the foot of South park, joining the main river at Pueblo; Squirrel creek, the Little Sandy, and Big Sandy, flowing S. E. from the divide to the Arkansas. N. of the divide, the E. slopes of the mountains are drained by the South Platte and its tributaries. This river rises near the foot of Mt. Lincoln, in the N. W. corner of South park; it flows in a S. E. direction, receiving numerous smaller streams from the surrounding ranges and spurs, and leaves the park about 70 m. N. of the base of Pike's peak. After passing through the foot hills, it pursues a N. course for over 100 m. to the junction with its branch, the Cache à la Poudre, whence it flows E. and N. E. until it leaves the territory at its N. E. corner. The principal tributaries of the South Platte from the mountains have an E. direction, and join the main river before its confluence with the Cache à la Poudre, which also rises in the mountains N. of Long's peak. Beginning from the south, they are: the North fork of the South Platte; Clear creek, which, rising near the base of Gray's peak, flows through Clear Creek and Gilpin counties; St. Vrain, and Big Thompson. Flowing into the South Platte from the divide are Plum, Cherry, Terrapin, Kiowa, Bijou, and Beaver creeks. From the N. limits of the territory, flowing in a S. direction into the South Platte, are the Crow, Pawnee, and Horse Tail creeks. The Smoky Hill and Republican forks of the Kansas rise in the E. central portion of the plains, and pursue an E. direction to the limits of Colorado. The region W. of the main range, and N. of the Uncompahgre mountains, is drained by the tributaries of the Rio Colorado and the head waters of the North fork of the Platte; the latter are in the North park and surrounding mountains and flow northward. The principal northern tributaries of the Colorado are Bear river, flowing W., which has numerous branches rising in Elk Head, Rabbit Ears, and Escalante mountains; White river, which rises in the N. W. part of the territory, and flows W. until it empties into the Green, a tributary of the Colorado in the N. E. part of Utah; and Grand river, which rises near the base of Mt. Lincoln, and, receiving numerous tributaries from Middle park and the surrounding mountains, flows W. to its confluence with the Gunnison (also called the South fork of the Grand), near the W. central border of Colorado; its course is exceedingly tortuous, winding around mountain bases, and forming cañons of unknown

depth in the rocky barriers. The Gunnison rises in the Sawatch and Uncompahgre mountains, and pursues a N. W. course, through a continuous series of mountain chasms, to its confluence with the Grand; it has numerous tributaries. The Rio San Miguel and the Dolores rise in the San Miguel and La Plata mountains, flow N. W., and after uniting fall into the Grand. The Rio Grande rises in the S. W. part of the territory, E. of the Sierra La Plata, flows E. about 150 m., then bends abruptly, and pursues a S. course through the middle of the San Luis valley. Along the S. W. border of the territory are numerous streams which flow S. to the San Juan in New Mexico. On the plains many of the smaller tributaries of the Arkansas and the Platte disappear in the sands during the greater portion of the summer.—E. of the main range of mountains, a portion of the country N. of the divide has been to some extent geologically examined. Denver is situated on the tertiary rocks which contain the coal beds of the west. The rocks here are thickly covered with superficial drift. Passing S. up the valley of the South Platte, the tertiary sandstones are occasionally exposed in the banks of the river. About 12 m. S. W. of Denver are some remarkable soda lakes, resting on middle cretaceous rocks. From these lakes to the great divide the cretaceous and tertiary beds are concealed by superficial gravel and sand. On each side of the divide, beds of whitish-yellow and reddish sandstones appear, holding a nearly horizontal position. In the N. part of Colorado, near the E. base of the mountains, beds of tertiary coal have been found. The main range of mountains, particularly the gold and silver lodes, is composed of gneissic and granitic rocks. In the mountain valleys are immense deposits of modern drift. Bowlder drift is conspicuous in the mountains that wall in South park on the N. and N. W., while along the W. and N. sides appear lofty eruptive peaks, which seem to be old volcanoes. The mountains E. of the park have a gneissic and granitic nucleus. Within the park sedimentary rocks are found, and there are also salt springs and deposits of gypsum. The portion of Colorado W. of the main range of mountains forms part of the great volcanic basin which stretches S. into New Mexico, and N. W. into Utah and Idaho territories. In this region are many extinct volcanoes. The lava rocks which abound are not usually metalliferous, though they contain much mineral glass (obsidian). During the process of liquefaction which these rocks have undergone, vast areas, which now resemble lakes of black solidified sea water, have in some instances been submerged by the liquid overflowing from fissures hundreds of miles in length. The technical name of this formation is *pedrigal*, while the rocks are called *malpais*. The Rio Grande, from its source to beyond the limits of Colorado, flows through a *pedrigal* of extraordinary dimensions. In Middle park all the sedimentary rocks known in the country are found. Carboniferous beds are probably wanting, but the triassic, Jurassic, cretaceous, and tertiary are well developed. There are two groups of tertiary deposits: the lignite, or older tertiary, and the modern pliocene marls and sands. Grand river, just above the hot springs, passes through a high ridge of basalt, which has the lignite tertiary beds above and the cretaceous shales beneath. The tertiary rocks are of great thickness, and are composed mostly of fine sandstone and pudding stone. At the Grand cañon, just below the hot springs, the river cuts through a ridge of massive feldspathic granite for a distance of 3 m. between high walls.—Vast deposits of useful minerals of almost every kind occur in nearly every portion of Colorado. The most important of these are gold and silver, which are found in large quantities in a belt about 50 m. wide stretching N. and S. across the central portion of the territory. Gold occurs in lodes, or fissure veins, having a N. E. and S. W. direction, and in gulches or in placers; the latter being superficial deposits which have been washed from mountain summits and slopes to the plateaus, gulches, and valleys below. The veins occur in groups, often presenting the most complicated network on the surface. These groups are usually one or two miles in width and two or three in length, and there may be two or three distinct groups abreast of each other. The principal gold-bearing minerals are copper and iron pyrites. These mostly occur together; the latter, however, nearly always predominates, and is often found without the former. When both are present, the copper pyrites is always the richer in gold. These ores assay in bulk from $30 to $40 per ton. About 70 per cent. of the gold bullion is extracted from the ores of Gilpin, Clear Creek, Boulder, Park, and Lake counties, 50 per cent. or more being furnished by Gilpin county, the bullion shipped from which for the year ending July 1, 1870, amounted to $1,378,100. The deposits at the branch mint at Denver for the year ending June 30, 1872, amounted to $1,001,564 81, of which $16,336 54 were silver. The total deposits of gold which had been made at this office up to June 30, 1872, amounted to $5,552,371 69, of which $4,985,754 67 were the product of Colorado. According to official mint returns, the deposits of gold from Colorado at the United States mint, branches, and assay offices, up to June 30, 1872, have been as follows:

YEARS.	Value.	YEARS.	Value.
1859.....	$4,171 70	1867.....	$1,026,276 83
1860.....	599,846 30	1868.....	1,081,040 16
1861.....	2,091,197 17	1869.....	1,652,492 21
1862.....	2,035,416 50	1870.....	1,551,102 81
1863.....	2,893,336 87	1871.....	1,495,035 66
1864.....	2,136,684 69	1872.....	1,176,518 09
1865.....	1,622,249 45		
1866.....	1,018,052 52	Total	$20,338,420 96

Reckoning the deposits at one third of the total product of the mines, the total yield of gold for the territory to June 30, 1872, was more than $60,000,000. For the extraction of the gold, the common stamp-mill process, with amalgamation in battery and upon copper plates, is now almost exclusively employed, although it is generally admitted that only a portion of the precious metals is secured in this way. According to the best statistics attainable, which are somewhat imperfect, the number of stamp mills in Colorado in 1870 was 105, with more than 1,800 stamps. Of these mills, 94 for the reduction of gold, with 1,607 stamps, of which 857 were in operation, were in Gilpin county, and the remainder in Clear Creek, Boulder, Park, and Lake counties; and 4 for the reduction of silver, with 70 stamps, in Clear Creek county, and 2 for the reduction of gold and silver in the same county. Although the discovery of silver in Colorado dates as far back as that of gold, it is only within a few years that rich deposits of this metal have been known to exist in the lodes of the mining counties. The silver ores have been divided into surface and galena ores. The former generally contain, besides more or less zinc blende, a little decomposed galena and sulphuret of silver; and very often the zinc blende is also decomposed. With increasing depth the amount of galena and zinc blende gradually increases, until at a depth not exceeding 100 ft. they decidedly predominate. The principal silver-producing county is Clear Creek. The actual development of the prominent silver lodes was begun in 1867; the whole amount of ore mined up to April 1, 1869, is estimated at 1,100 tons, which yielded $250,000 in coin. The production of silver ore in Clear Creek county amounts to about 2,000 tons per annum. The estimated yield of silver, including shipments of ore, during 1870, was about $400,000. The deposits of silver from Colorado at the United States mint, branches, and assay offices, to June 30, 1872, have been:

YEARS.	Value.	YEARS.	Value.
1866.....	$419 00	1871.....	$367,510 31
1867.....	543 78	1872.....	264,821 18
1868.....	46,881 13		
1869.....	197,678 54	Total.....	$1,114,543 43
1870.....	236,689 49		

The following statement made by E. E. Burlingame, Feb. 17, 1871, shows the coin value per ton of 2,000 lbs. of specimens of ore from different districts of Gilpin and Clear Creek counties:

	SAMPLES.	Gold.	Silver	Total.
Gilpin.	35, of smelting ore, 1st class.	$138 92	$30 32	$169 24
	32, " " "	90 30	37 62	127 92
	28, " " "	50 28	61 90	112 18
	72, of mill ore, 2d "	24 10	11 37	35 47
	56, " " "	22 51	12 85	35 26
	59, " " "	20 07	17 14	37 21
Clear Ck.	18, of smelting ore, 1st "	18 44	228 90	247 34
	22, " " "	.....	409 81	409 81
	39, of mill ore, 2d "	7 82	35 97	43 79
	34, " " "	.....	86 31	86 31

Iron pyrites is universal in the mines, occurring in cubes from the size of a pin's head to an inch on the sides. Copper, almost always in the form of pyrites, occurs in the prominent lodes in considerable quantities; the first class ores of some of the mines contain from 10 to 15 per cent. of it. Besides copper and iron pyrites, almost every lode contains a little zinc blende and galena; in some districts these minerals form a considerable part of the ore. Large beds of lignite, pronounced superior to any other found in the west, occur on the E. declivity of the mountains, in Boulder and Jefferson counties. The coal obtained resembles anthracite in appearance, but burns with a strong yellowish white flame, gives little soot, and from 2 to 3 per cent. of ashes of a reddish yellow color. It has been found in veins 14 ft. thick, of which 13 ft. are workable coal. The value of these beds of lignite is greatly enhanced by the simultaneous occurrence of fire clay and iron ore. The former, found in layers from 3 to 5 ft. thick between the different strata of coal, is of a grayish blue color, burns almost white, and compares favorably with the standard clays of Europe. Lignite is also found in the vicinity of the Raton mountains near Trinidad, and in the Arkansas valley E. of Cañon City. The iron ore occurs, scattered over the surface, all the way from South Boulder to Coal creek. At a depth not exceeding 5 ft. masses of 1,000 lbs. have been found in the sand; and though no defined bed has yet been discovered, the great quantity of superficial bowlders indicates that such a deposit exists. The ore yields from 50 to 60 per cent. of iron. Salt springs occur in South park, where extensive works have been erected. Valuable soda springs exist near the base of Pike's peak, and in other portions of Colorado. Hot sulphur springs, possessing valuable medicinal qualities, occur on a tributary of the Grand, in Middle park, about 12 m. from its S. boundary.—The climate of Colorado is remarkably equable and healthy. The winters are mild, and the summers cool and bracing. Hot, sultry nights are unknown. On the plains the temperature averages from 50° to 55°. At Denver during 1870 the mean temperature for each month and the amount of rain and melted snow were as follows:

MONTHS.	TEMPERATURE.			Rain and melted snow, inches.
	Max.	Min.	Mean.	
January.....	60°	5°	29·4°	1·15
February.....	64	1	35·5	1·70
March.....	67	—8	32·7	·70
April.....	80	16	48·1	2·80
May.....	86	40	56·1	·35
June.....	94	48	68·2	·52
July.....	98	53	74·2	·51
August.....	97	45	64·8	·12
September.....	89	40	60·1	2·85
October.....	83	27	47·8	·68
November.....	68	20	41·8	·54
December.....	60	—18	23	·73
Year.....	.....	.....	48·5	12·65

The average temperature for 1871 was 54·1°; rainfall, 12·35 inches. For 1872 the average temperature was 49·8°; rainfall, 18·77 inches. The average temperature of the foot hills is from 45° to 50°, and of the mountains from 40° to 45°. On the summits of the mountain ranges and in the higher parks the cold is often extreme; but in the mountain valleys and foot hills the thermometer seldom falls below zero, and in midwinter there is much delightful weather. The greatest extremes of cold and the most severe storms occur in November and December. In the mountains the greatest fall of snow occurs in September, October, and April; except on and near the summits, where the fall is considerable, it does not remain long on the ground. On the plains, in the latitude of Denver, the fall of snow never exceeds 10 or 12 inches, and seldom remains longer than 24 hours. In the S. portion of the plains there is little snow, and the winters are very mild. There is no rainy season in Colorado. On the plains the rains generally fall in the spring and early summer, scarcely any falling in autumn or winter. In the mountains, rains are frequent in the summer and autumn, but rain storms of long duration are unknown. Heavy wind storms are common in all parts of the territory. The extreme rarity of cloudy weather and of mists and fogs is remarkable. The atmosphere is wonderfully clear and invigorating, and remarkably free from humidity. These characteristics of climate, together with the great altitude, 4,000 to 10,000 ft., and the beautiful scenery, have made Colorado a resort for persons afflicted with throat and lung diseases, who derive much benefit from a residence here. In 1870 there were 375 deaths, of which 32 occurred from consumption.—About one third of Colorado is good agricultural land. In the plains and the parks the soil of the valleys is peculiarly fertile, and produces in abundance the hardier cereals and vegetables. The arid sands of the plains have been proved to be merely surface deposits, covering a soil of remarkable fertility when moistened. The necessary moisture is supplied by irrigating canals, which have already been constructed to a great extent. The chief crops are wheat, barley, oats, and rye. The average yield of wheat is 25 bushels per acre. Except in the S. districts, the nights are rather cold for corn; but in the valleys of the Arkansas and tributaries 30 bushels per acre may be raised. Large crops of buckwheat and hay are produced; 500 bushels of potatoes have been obtained from a single acre. Vegetables grow to an enormous size. Apples, pears, plums, cherries, and grapes have been cultivated with great success; while it is not doubted that peaches, apricots, quinces, nectarines, &c., may be successfully raised. The grapes are of exquisite flavor and superior size, and the small fruits grow with remarkable luxuriance. But Colorado excels as a grazing and dairy country, deriving great advantages from the peculiarity of its nutritious grasses, upon which cattle thrive the whole year, and of which there is a great variety in the valleys and on the mountain sides. The uplands and ridges between the watercourses are covered with a short, crisp, drab-colored grass. These grasses are not destroyed by frosts, but, becoming cured during the winter months, retain their nutritious qualities, and afford excellent pasturage at all seasons. Except the parks and valleys, the vast region W. of the central mountain range is not suitable for cultivation, but pine forests and excellent pasturage abound. The principal varieties of timber are pine, hemlock, spruce, cedar, fir, cottonwood, box elder, and quaking aspen. The sides of the mountains below the timber lines and the foot hills are covered with forests of pine, larch, and aspen, which afford valuable timber and fuel.—The wild animals are the bear, couguar, wolf, buffalo, elk, deer, antelope, lynx, wildcat, badger, hare, fox, mink, pine marten, beaver, and prairie dog, the last resembling the fox squirrel. Of game birds there are the wild turkey, mountain grouse, sage hen, prairie chicken, ducks, geese, swans, ptarmigan, &c.—According to the census of 1870, the number of acres of improved land was 95,594; cash value of farms, $3,385,748; of farming implements and machinery, $272,604; total amount of wages paid during the year, including value of board, $416,236. The productions were 255,932 bushels of spring and 2,535 of winter wheat, 5,235 of rye, 231,903 of Indian corn, 332,940 of oats, 35,141 of barley, 178 of buckwheat, 7,500 of peas and beans, 121,502 of potatoes, 19,787 tons of hay, 890 lbs. of tobacco, 204,925 of wool, 392,920 of butter, 33,626 of cheese, and 19,787 gallons of milk sold. There were 6,446 horses, 1,173 mules and asses, 25,017 milch cows (and 6,871 not on farms), 5,566 working oxen, 40,153 other cattle (and 88,720 not on farms), 120,928 sheep, and 5,509 swine. Value of live stock, $2,871,102; of home manufactures, $57,658; of animals slaughtered, or sold for slaughter, $252,394; of all farm productions, including betterments and additions to stock, $2,335,106. The value of the agricultural products for 1872 was estimated at $4,650,000. The returns of the assessors to the auditor of the territory for that year show the number of horses to be 23,000; asses, 10,000; cattle, 243,000; sheep, 270,000; goats, 10,000.—There is an abundance of water power in Colorado, which has as yet been little utilized. The total number of manufacturing establishments reported by the census of 1870 was 256, having 49 steam engines of 1,433 horse power, and 31 water wheels of 792 horse power, and employing 876 hands. The capital invested amounted to $2,835,605; the wages paid during the year were $528,221; value of materials used, $1,593,280; value of products, $2,852,820. Besides quartz mills, the only important establishments are a few for the manufacture of iron, wool, and flour, which have recently been established at Denver.—Within a few years

railroad enterprise has been active in Colorado. The territory contained on Jan. 1, 1872, 392 m. of completed railroads. The lines in operation are as follows: the Denver Pacific, from Cheyenne, Wyoming territory, to Denver, 106 m.; the Kansas Pacific, from Kansas City, Mo., to Denver, 639 m.; the Denver and Boulder Valley, from Hughes, on the Denver Pacific, 18 m. from Denver, to Erie (to be extended to Boulder City, 16 m. further); the Colorado Central, which will open a line of communication between Denver and the mountain towns and cities (completed to Black Hawk, 38 m., with branches from Fork's Creek to Floyd Hill, 4 m., and from Golden City to Longmont, 41 m.); the Arkansas Valley, from Kit Carson on the Kansas Pacific to Pueblo (completed to West Las Animas); and the Denver and Rio Grande railroad, which will connect Denver with El Paso in Mexico (completed to Pueblo, 118 m., with a branch to Coal Banks, 38 m.). The following table shows the length of railroads in operation in the territory in 1873, with the capital stock and cost of construction of the entire lines so far as ascertainable:

LINES.	Length in the territory.	Capital stock.	Cost of road and equipments.
Denver Pacific..	96 miles.	$2,500,000	$5,000,000
Denver and Boulder Valley	15 "	.....	450,000
Kansas Pacific..	184 "	9,688,950	36,747,300
Colorado Central	88 "	1,474,300	3,300,000
Denver and Rio Grande.....	156 "	4,500,000	7,520,500
Arkansas Valley	56 "	.....	.....
Total.....	590 miles.	.....	.....

The Denver and Rio Grande was the first narrow-gauge railroad built in the United States. The gauge is 3 ft., the rails weighing only 30 lbs. to the yard. The maximum curvature is 6° in 100 ft., and the maximum grade 75 ft. to the mile. The use of this gauge has proved very successful, both from its effects in cheapening transportation, and its practicability over routes presenting insuperable obstacles to the construction of a wider road bed. A line of telegraph from Denver connects with the transcontinental line at Julesburg, Nebraska, and another connects Denver with Santa Fé, New Mexico. The entire length of telegraph lines in operation, Jan. 1, 1873, was 862 m. Colorado contains 6 national banks, with an aggregate capital of $575,000, of which 3, with a capital of $400,000, are in Denver; and 27 fire, 12 life, and 2 accident insurance companies have agencies in Colorado.—The government is similar to that of the other territories. The legislature consists of a council of 13 and a house of representatives of 26 members; its sessions are biennial. The election is held on the first Tuesday in October. The executive power is vested in a governor, secretary, treasurer, auditor, adjutant general, attorney general, superintendent of public instruction, and secretary of the board of agriculture. The salary of the governor is $2,500; secretary, $1,800; treasurer, $700; auditor, $1,000. The judicial power is vested in a supreme court, district courts, probate courts, and justices of the peace. The supreme court is composed of a chief justice and two associates, one of whom holds a district court in each of the three judicial districts into which the territory is divided. The supreme and district courts have general jurisdiction in law and equity. The salary of each judge is $4,500. The principal executive and judicial officers are appointed for four years by the president of the United States. The territory is entitled to one delegate in congress. There is no territorial debt. In 1870 the county debts amounted to $678,829, for which bonds had been issued to the amount of $620,000; town, city, &c., debts, $2,329. The total taxation not national was $362,197, of which $63,425 was territorial, $267,207 county, and $31,571 town, city, &c. In 1871 the internal revenue collections amounted to $69,993. In 1870 the assessed value of real estate was $8,840,811, personal $8,497,290; total assessed value, $17,338,101; true value of real and personal property, $20,243,303.—Colorado has a good school system, administered by a territorial superintendent and a county superintendent for each county, who are elected biennially by the people. There are also three directors for each of the districts into which each county is divided, elected annually. In 1872 the number of public schools was 175; teachers, 230; pupils, 5,640; value of school buildings, $180,645; amount of school fund, $121,372. The total expenditure for school purposes in 1871 was $98,105, of which $45,250 were for teachers' wages. High schools have been organized in a number of the chief towns. According to the census of 1870, there were 18 private schools, with 32 teachers and 516 pupils. There were 175 libraries of all classes, with 39,344 volumes; of these 30, containing 11,385 volumes, were public, of which 2 (2,000 vols.) were school libraries, and 22 (5,685 vols.) were connected with Sunday schools. The territorial library at Denver, which also contains a valuable collection of mineral specimens, had 2,600 volumes. There were 14 newspapers and periodicals, issuing 1,190,600 copies annually, and having an average circulation of 12,750. Of these 4 were daily, circulation 2,200; 9 weekly, circulation 9,550; and 1 monthly, circulation 1,000. The number of church organizations was 55; of church edifices, 47; sittings, 17,495; value of church property, $207,230. The principal religious denominations were:

DENOMINATIONS.	Church edifices.	Sittings.	Value of property.
Baptist.....	4	855	$11,090
Congregationalist.....	4	1,050	28,200
Episcopal.....	8	2,000	46,040
Methodist.....	13	3,815	50,800
Presbyterian.....	5	1,200	21,800
Roman Catholic.....	13	8,575	49,300

—Colorado was organized as a territory by act of congress of Feb. 28, 1861, from parts of Kansas, Nebraska, New Mexico, and Utah. The portion N. of the Arkansas river and E. of the Rocky mountains formed part of the Louisiana purchase from the French in 1803; the remainder was included in the Mexican cession of 1848. The first well authenticated account of the discovery of what is now Colorado is the record of Vasquez Coronado, who under Spanish auspices commanded an expedition from Sinaloa, Mexico, in 1540. In 1806 the United States government fitted out an expedition for the purpose of exploring this region, under command of Lieut. (subsequently Major) Zebulon M. Pike. This expedition travelled from N. to S. in the mountain region nearly across the territory, and discovered the peak which has since been called Pike's peak from its commander. In 1820 another expedition, under command of Col. S. H. Long, visited this region; and in 1842–'4 occurred the celebrated exploration of Gen. (then Col.) John C. Fremont across the Rocky mountains. Before the commencement of the present century there is no record of any inhabitants in what is now Colorado, except in the S. portion, where a few Mexicans and Spaniards were settled. Besides these, before the discovery of gold, there were only a few American traders, hunters, and trappers in the region. Nothing definite was known of the existence of gold in the territory before 1852, when a Cherokee cattle trader discovered the metal near the mouth of what is now called Clear creek. The first person to organize a party to explore the mining district was W. G. Russell, a Georgian, who in 1858 found gold on Dry creek, about 7 m. S. of Denver. These discoveries were speedily known throughout the country, and about 400 persons had reached the mining region in the winter of 1858–'9. The first discovery of a gold-bearing lode was made by John H. Gregory, May 6, 1859, in what is now Gregory mining district, Gilpin county. The first act of the miners toward organizing a government was the erection of Arapahoe county, with Auraria as its county seat; soon after which, Nov. 6, 1858, they elected a representative to the Kansas legislature, and a delegate to congress, who was instructed to urge the separation of this district from Kansas, and the organization of a new territory. In the autumn of 1859 a convention of 128 members assembled at Denver, which decided to memorialize congress for a territorial form of government. Within a few years a number of colonies organized in the east have been established in Colorado; the most important of these is Union colony, at Greeley, on the Denver Pacific railroad. Since 1870 the population has rapidly increased. (See supplement.)

COLORADO, a S. E. county of Texas, comprising one of the best cotton-growing portions of the state; area, 905 sq. m.; pop. in 1870, 8,326, of whom 3,701 were colored. It has an abundant supply of timber, about one half the area being bottom land heavily wooded, or upland covered with post oak, live oak, &c. The soil is fertile and well watered by the Colorado and other streams. The Buffalo Bayou, Brazos, and Colorado railroad terminates at the county seat. The chief productions in 1870 were 130,423 bushels of Indian corn, 14,442 of sweet potatoes, and 2,796 bales of cotton. There were 2,751 horses, 4,370 milch cows, 26,125 other cattle, 2,987 sheep, and 6,280 swine. Capital, Columbus.

COLORADO, a river of Texas, rising in Bexar district, between the 32d and 33d parallels, about lon. 102° W. It flows successively S. E., E., S., and again S. E., and empties into Matagorda bay. Its length is over 900 m.; average width 250 ft. The only important tributaries are in the upper part of its course, where it receives from the S. W. the Rio Concho, San Saba, and Llano, and from the N. W. Pecan bayou. In winter it is navigable for steamboats to Austin. It flows for more than two thirds of its length through a highly fertile region, and is a beautiful clear stream. It owes its name to an interchanging of the names of Colorado and Brazos, which the first discoverer bestowed on these neighboring streams, calling the present Colorado the Brazos de Dios, and the present Brazos the Colorado or ruddy.

COLORADO, Rio Colorado, or **Colorado River of the West,** a river formed by the junction of the Green and Grand rivers in S. E. Utah, about lat. 38° N., lon. 110° W. Green river rises in the Rocky mountains near Fremont's peak, in the W. part of Wyoming territory, flows S., turns S. E. through the N. E. corner of Utah, entering the N. W. corner of Colorado, then bends S. W. and reënters Utah, and afterward pursues a general S. course to its junction with the Grand. Among its tributaries are the Yampah or Bear, the White, Uintah, and San Rafael. Grand river rises in the Rocky mountains, in Middle park, W. of Denver, Colorado, and has a S. W. course. Its principal tributaries are the South fork or Gunnison, Rio San Miguel, and Dolores. Below the junction the Colorado flows S. W. into Arizona. Near the 36th parallel it makes a bend, and pursues a winding course in a general W. direction to the border of Nevada, whence it flows S., separating Arizona from Nevada and California, and Sonora from Lower California, until it discharges its waters into the gulf of California. The principal tributaries from the east are the San Juan in Utah, and the Colorado Chiquito, or Little Colorado, Bill Williams fork, and Gila, in Arizona. From the west the only noticeable affluents are the Dirty Devil and Escalante in Utah, the Paria, Tapeat's river, and the Kanab, from Arizona, and the Rio Virgen, which enters from Nevada. In many respects the Colorado is remarkable. Above Callville, Nevada, the river, as well as its tributaries, flows through deep cañons, the walls of which in some places rise nearly 7,000

ft. above the surface of the water. Upon the generally treeless plateaus divided by these rivers rise other terraces, with nearly perpendicular walls 1,000 ft. or more in height. Both the loftier and lower plateaus are covered with massive ruins of once populous walled towns and cities, which are supposed to have been occupied by the Toltecs, the predecessors of the Aztecs. The Moqui Indians in N. E. Arizona, near the Colorado Chiquito, are supposed to be descendants of this race. The Green river first enters the Uintah mountains in the extreme N. W. corner of Colorado, at a point called Flaming Gorge, just below which the walls of the cañon are nearly 1,500 ft. high. The stream is swift, the descent being in places 20 ft. to the mile. Rapids and cataracts, some of them of great height, are frequent. Above the junction of the Grand there is generally on the one side or the other a narrow strip of land forming the valley of the river. The extent of these cañons is over 500 m. The largest and most noted of them, the Grand cañon, extends down the river, from the mouth of the Little Colorado, a distance of more than 200 m. The height of the walls varies from 4,000 to 7,000 ft. The channel is from 50 to 300 ft. in width, and the descent of the stream from 5 to 200 ft. to the mile. "The banks of the river," says Major Powell, "are cliffs of solid rock, often vertical for hundreds or thousands of feet; but in places these cliffs or walls of the cañon are broken down in steep slopes, and in other places they are terraced on a grand scale, the glacis often being from a half mile to a mile in width, and the step to a higher terrace several hundred feet. There is no proper flood plain along the river through this cañon, but usually rocks have fallen down from the walls on one or both sides, so as to form a talus, varying from 25 to 300 ft. in height. But in other places there is no talus, the river filling the channel from wall to wall. Numerous streams come down from the high plateaus on either side, each having its own winding cañon, and these have tributary cañons, making the topography adjacent to the river exceedingly intricate." In the valley of the Colorado below the cañons is found a large extent of fertile bottom land, easily cultivated by artificial irrigation. This valley varies in width from 3 to 8 m. The greater part of it is covered with timber, chiefly cottonwood and mezquite. Just below Callville is the Black cañon, about 25 m. long, with walls in places from 1,000 to 1,500 ft. high, which is the only cañon below the Grand cañon. After receiving the Gila, the Colorado takes a sudden turn westward, forcing its way through a chain of rocky hills, 70 ft. high and about 350 yards in length. In this passage it is about 600 ft. wide, but soon expands to 1,200 ft., which it retains. After sweeping round 7 or 8 m., it resumes its S. direction, and pursues a very tortuous course of nearly 180 m. to its mouth. The bottom lands are here from 4 to 5 m. wide, and covered with a thick forest.—The length of the Colorado, from the sources of Green river, is about 2,000 m. It is navigable for steamers to Callville, 612 m.; and it is thought that navigation may be carried to the foot of Grand cañon, 57 m. above. Arnold's point, 35 m. from the mouth, is the head of navigation at low water (winter) for vessels drawing 9 ft. To the head of tide water, 40 m., navigation is difficult and dangerous, from the rapid rise of the tide and the shifting of the channel. Above this point the current, obstructed by small snags and sawyers, runs from 1 to 3 m. an hour (in freshets from 2 to 6 m.) through a narrow channel. The rise of ordinary spring tides is 12 ft. In freshets the river rises at Arnold's point 15 ft. above low water, and in seasons of unusual height it flows back over the California desert, filling up several basins, and what is known as New river, in Lower California. This water remains one or two years, when it is swallowed up by the sands, or evaporated by the hot sun. At the mouth of the river a good harbor was discovered in 1864. It consists in fact of a second mouth of the Colorado, which branches off some 80 m. up, and empties in such a way as to afford secure shelter from the terrible "borers" of the gulf. It is from 50 to 80 yards broad, and with perpendicular banks of hard clay some 25 ft. high at low tide. At high tide the banks overflow a few inches, but the anchorage remains good. About 6 m. up there is an abrupt fall extending across the stream, some 4 or 5 ft. high at low water, but disappearing at high tide. The depth of water in this singular harbor at low tide is from 15 to 25 ft. This harbor is now used almost exclusively by the vessels in the Colorado trade. Their cargoes are here transferred to the small river boats and barges, and they here receive their outward-bound freights. — In 1540 Fernando Alarcon, in a voyage to explore the gulf of California, by order of the viceroy of Spain, discovered the mouth of the Colorado, which he describes as "a very mighty river, which ran with so great a fury of stream, that we could hardly sail against it." He fitted out two boats with which he sailed up the river. Father Kino, about the year 1700, also sailed up to the confluence with the Gila, where he established a mission. Lieut. Ives explored the Colorado below the cañons in a steamer in 1857. The first descent through the cañons was made in 1867 by James White, from a point on Grand river about 30 m. above its junction with the Green. White, Capt. Baker, an old miner and an ex-officer of the confederacy, and Henry Strole were prospecting for gold in the W. portion of Colorado. Having met with ill success, and having lost Capt. Baker during an attack by Indians in a lateral cañon of the Grand, which they had descended for water, White and Strole determined to attempt an escape by the river rather than retrace their steps through a country beset by Indians. They constructed a frail raft of a

few pieces of drift wood, and, having secured their arms and provisions, commenced their downward journey on the night of Aug. 24. Subsequently the raft was generally secured by night and allowed to drift only during the day. On the 28th, while descending a cataract, Strole was drowned, and all the provisions were washed overboard. White continued the journey alone, amid great peril from cataracts, rocks, and whirlpools, hemmed in by the walls of the cañon, and 10 days after reached Callville, having tasted food but twice during that period. Once he obtained a few green pods and leaves from bushes growing along the stream, and the second time he was given some food by Yampais Indians who occupied a low alluvial strip of land along the river, the trail to which from the plateau was known only to themselves. In 1869 a corps fitted out by the United States government, under the command of Prof. J. W. Powell, started in boats from the upper Green river in Wyoming territory, and, after much peril and many hair-breadth escapes, reached Callville, having passed through the whole length of the cañons. In 1871 another expedition under Prof. Powell was fitted out for the exploration of the Colorado valley. The portion of the river embraced in this exploration is about 1,000 m. in length, commencing where the Union Pacific railroad crosses Green river, and extending down the stream to the end of the Grand cañon. E. and S. of the river the survey runs back from 10 to 40 m. from the stream. On Jan. 1, 1873, the exploration had been completed of the region N. and W. of the Colorado, drained by its tributaries, from the Rio Virgen on the south to the Dirty Devil on the north, embracing a territory 300 m. long and 175 m. wide. N. of this a general reconnoissance had also been made of the territory between the Wasatch mountains and San Pete valley on the west and Green river on the east, embracing the valley of the Uintah, the ranges of mountains and extensive plateaus lying S., the valley of Price river, the Wasatch plateau, the valley of the San Rafael, and the plateau and mountains in which this river has its sources. The survey of the region embraced in Prof. Powell's plan is to be completed in 1875, when the entire valley of the Colorado will have been explored, the portion above the Union Pacific railroad and that below the Grand cañon having been already surveyed.

COLORADO, or **Cobu Leubu,** a river of the Argentine Republic, rising in the Andes about lat. 35° S., and flowing S. E. across the pampas through an imperfectly known country to the Atlantic, which it enters in lat. 39° 51′ S., lon. 62° 4′ W.; length about 600 m. By some authorities it is supposed to receive the waters of the Mendoza and the Desaguadero, which drain the great system of lakes in San Luis and Mendoza. It discharges through several mouths, the principal one having two fathoms of water at low tide. It is obstructed seaward by shifting sand banks. The tide rises at its mouth from six to nine feet. It is said to be navigable only about 120 m.

COLOR-BLINDNESS, a curious defect in vision, depending on a want of sensibility in the eye, or perceptive capacity in the brain, in consequence of which certain colors are not distinguished, or all colors are alike invisible as such. It is believed that attention was first called to this defect by the publication by Dr. Dalton, the distinguished chemist, in 1794, of the particulars of his own case. The name given to the affection is that proposed by Dr. George Wilson, from whose work on the subject (Edinburgh, 1855) the following summary is chiefly condensed. It has also been called Daltonism. A cause for the lateness of the discovery of this phenomenon may be found in the fact that while the ignorant would not investigate a disability of the kind under which they might labor, the educated and intelligent would learn to compensate for it by the use of other senses. No mention of color-blindness has been found in ancient or modern writers up to the period named; but the examples of the affection already collected are numerous, and among its subjects were Dugald Stewart and Sismondi, contemporaries of Dalton. The difficulty shows itself in three forms or degrees: 1, in an inability to distinguish nicer shades and hues, such as grays and neutral tints; 2, in inability to distinguish certain primary colors from each other, as red from green, or these from secondary or tertiary hues, as scarlet, purple, &c.; 3, in inability to discern any color as such, the person seeing only white and black, lights and shades. In the first degree, this affection is, among males, rather the rule than the exception. Dr. Wilson found that of 1,154 persons examined by him in Edinburgh, more than one in 18 were in a greater or less degree color-blind; and that of 60 persons in the chemical class of the Edinburgh veterinary college, the majority declined to name any colors beyond red, blue, yellow, green, and brown; while they failed entirely in attempting to arrange nearly related hues of yarns or stuffs, or those of varying shades of the same hue. He found that pink and other pale colors, especially pale yellow and blue and green, were often confounded. The same thing happened with orange and yellow, lilac and bluish gray, &c. In the second degree, in the less marked cases, red and green, or these with olive and brown, fail to be distinguished. And it is apparently singular that colors among the most distinct to a normal eye are in these cases the most easily confounded, red and green being more readily so than yellow and purple; while green is in these respects the most delinquent of all the colors. Dugald Stewart could not distinguish the red fruit of the Siberian crab from the green color of its leaves. Three brothers, Harris, mistook red for green, orange for grass green, yellow for light green. A tailor at Plymouth regarded the solar spectrum as consisting only

of yellow and light blue; while indigo and Prussian blue he pronounced black. Dr. Dalton could not by daylight tell blue from pink; he scarcely saw the red of the spectrum, and considered the remainder of it as showing but two colors. But a failure to perceive the more refrangible rays is most common. Seebach concludes that all eyes, however imperfect otherwise, see yellow; and that the sensations of complementary colors are inseparable, so that if the eye be sensible or insensible to either it will be so to both, the eye that fails to see orange also mistaking blue, &c. In the third degree, however, admitted by other observers, all colors are recognized only as giving certain degrees of light or shade. This form is rare. Dr. Wilson found but one case; and in this some of the colors could be named by gas light or transmitted light, none by reflected daylight.—The color-blind very often do not know their own defect; and in the lower walks of life their lack incapacitates them for certain employments, or may even imperil life. These evils particularly befall weavers, tailors, gardeners, railway attendants, sailors in the steam service, and others dependent on the use of colored articles or the perception of colored signals. The importance of a correct perception of colors, in the present modes of signalling upon railways and shipping, cannot be overestimated. For example, the English admiralty orders require at night a green light on the starboard, a red light on the port side of vessels; and by the color the steersman must know which side of the vessel is toward him, consequently whether it is going to right or left, and whether to starboard or port his helm. Although no case of accident has yet been traced to color-blindness in the attendants, yet such a result is easily conceivable, especially as their powers of vision are not tested; and the most doubtful complementaries, red and green, are much in use as signals. Practical inferences are that the ability in this respect of candidates for the posts of sailors and railway men should always be first carefully tested; but, better still, that form and position of signals should, as far as practicable, be substituted for color, as the former are qualities less liable to be mistaken, and the color-blind generally perceive form even more correctly than other persons.—The cause of color-blindness probably lies somewhere between the eye, as an organ, and the mind; or more correctly, in a want, partial or total, of a certain perceptive faculty, that of color, as an element of active mind. Dalton thought the retina or humors of his eyes must be colored, and probably blue; a nice *post-mortem* dissection of his eyes revealed no abnormal coloration or appearance whatever. Dr. Trinchinetti proposed as a cure the extraction of the crystalline lens; but Wilson gives a case of cataract, in which color-blindness supervened on the extraction of the lens. In one instance, the latter found the difficulty to follow permanently on concussion of the brain; sometimes it was temporary, and dependent on congestion, dyspepsia, or hepatic derangement; most frequently it was congenital. Color-blindness is generally hereditary. Leber, who examined many cases, found it a frequent sympton of atrophy of the optic nerve, and of scotoma (*muscæ volitantes*, &c.). Dr. Argyll Robertson (Edinburgh "Medical Journal," February, 1869) found it accompanying a case of spinal disease. Dr. Chisholm of Charleston, S. C., observed it in a case of inflammation of the optic nerve. It is often, however, unaccompanied with any impairment of vision. It has been observed during pregnancy, and Lawson met with a case which was produced by over use of the eyes in sorting colors. As has already been noticed, the ethereal waves of light in the different colored rays vibrate in different times, the number of vibrations in the middle red ray being about 477,000,000,000,000, while the number in violet light is 699,000,000,000,000 times in a second. There are also waves on either side of these limits which are too slow on the one hand, and too rapid on the other, to be perceived by the human eye, just as some vibrations in the air may be too slow or too rapid to be perceived by the ear. That some persons can perceive a lower tone of red, or the more extreme rays of the violet spectrum, as well as that some can perceive lower or higher notes in music, is a matter of observation, as also the fact that the perception of the depth and tone of various colors varies in different individuals. It is then a matter of no great surprise that in some persons the retina should fail to perceive the difference between the vibrations which take place in some of the colored rays. In the congenital cases, and in some others, the attempt at cure by medicines has been found utterly hopeless; of a cure through education no case is established. The want may be alleviated by carrying about a chromatic scale, named, for purposes of comparison; but little help is thus derived. It is strange that the substitution of artificial for solar light seems as yet to offer decided relief in the largest number of cases; and a draper has been known to keep his shop lighted with gas during the day for this purpose, and with success. Very white light is less useful in these cases; the best being a light yellow by passing through stained glass. Dr. Wilson found that a good test for persons confounding red and green, and who may be unaware of the fact, was obtained by placing before their eyes a red glass; the beholder is at once astonished at the difference which he discovers in looking at the two colors.

COLOR-HEARING. See supplement.

COLORIMETER, an instrument for measuring the depth of color in a liquid by comparison with a standard liquid of the same tint. The comparison is made either by varying the depth of the stratum of liquid under examination till it exhibits the same intensity of color as the normal liquid, and then measuring the

depth of the stratum, or by diluting the stronger-colored liquid with water till equal columns of the two exhibit the same color.

COLOSSÆ, an important ancient city of S. W. Phrygia, on the river Lycus, an affluent of the Mæander. Xenophon speaks of it as being a large and flourishing place at the close of the 5th century B. C. At a still earlier period (481) Xerxes passed through it on his way to Greece. Colossæ was famous for beautifully dyed wool, and carried on an extensive trade in that article. After the time of Cyrus the Younger it seems gradually to have fallen into decay. It was the seat of one of the earliest Christian churches, to which one of St. Paul's epistles is addressed. During the middle ages it was called Chonæ. Khonos, a modern town on its site, is 120 m. S. E. of Smyrna.

COLOSSEUM, Coliseum, or **Colisæum,** an immense amphitheatre in Rome, the largest permanent structure of the kind ever built, standing near the centre of the ancient city, upon the spot once occupied by the reservoir of Nero, about 500 yards S. E. of the Roman forum, and 200 S. W. of the baths of Titus. Its ruins are still sufficiently complete to show the form of almost the entire structure, and are among the best preserved and most magnificent remains in modern Rome. The building was at first called the Flavian amphitheatre, the name Colosseum being first used some centuries later with reference to its immense size. It was begun by Vespasian, built by him as far as the top of the third row of arches, and finished by his son Titus, by whom it was dedicated in A. D. 80, with games, gladiatorial shows, and scenic exhibitions of unprecedented splendor, a great number of gladiators and several thousand wild beasts being killed in contests in the arena. The building, which covers nearly five acres, and in its complete state had accommodation for 80,000 spectators, is in the



The Colosseum.

form of an ellipse; its longer diameter is 615 ft., its shorter 510; the height of its outer wall, where it is still entire, is 164 ft. The arena within is 281 ft. in length and 176 in breadth. The exterior wall of the edifice consists of four stories, of three different orders of architecture; the first (lowest) is Doric, the second Ionic, the third and fourth Corinthian. The material was chiefly travertine for the principal walls, the spaces between being filled in with brick. The part of the Colosseum designed for spectators is in its leading features arranged like that in other ancient structures of the same design (see AMPHITHEATRE); but the fact that in the ruin no traces are to be found indicating that the ranges of seats ever rose higher than at present, *i. e.*, to the bottom of the third story, or half the whole height, has perplexed all antiquaries. It is hardly to be supposed that the whole upper part of the building, erected at immense expense, was added for no object but to increase the exterior height; yet, if the places for spectators never extended to a higher point than would appear from the remains now existing, the upper stories would seem to have been only useful for that purpose. Various theories have been advanced on this subject; one of the most plausible is that the extra stories were in some way rendered necessary by the machinery of the *velarium* (awning or temporary roof) sometimes spread over the whole; another, that narrow galleries ran round the inner circumference of these upper walls; but this must remain a matter of conjecture. What was the position of the dens for the wild beasts used

in the combats of the arena has been another vexed question, as no traces of them are found; it appears probable, however, that they were situated under the *podium*, where they would open directly into the arena.—The best known events in the history of the Colosseum are those connected with the history of the Christian church. Many of the early Christians suffered martyrdom in its arena. St. Ignatius is said to have been the first, he having been given to the lions in this amphitheatre in the earliest days of Christianity. St. Potitus, St. Prisca, St. Martina, and many others, are recorded as having been put to death in the Colosseum in the 2d and 3d centuries, with hundreds of unnamed martyrs, of whom the only records remaining are notes of the number suffering together on the occasion of one festival or another. A cross now stands in the centre of the arena, erected in memory of their martyrdom; and around the edge, close to the wall of the *podium*, are small chapels or stations, marking the stages of the Via Crucis, the devotional exercise of the Roman Catholic church commemorative of Christ's progress to the crucifixion. These devotions are still performed in the Colosseum on Friday of each week. Excepting the record of these martyrdoms, carefully compiled by ecclesiastical historians and undoubtedly largely mixed with tradition, the Colosseum finds singularly little mention in the works of ancient authors. The building is supposed to have remained entire until Rome was invaded by Robert Guiscard, who began its demolition to prevent its being used as a fortress. It served that purpose in the middle ages, however, and was long held as a stronghold by the family of Frangipani, until they were dislodged by their enemies the Annibaldi. In 1312 the muncipality took possession of it, and it was again used for public entertainments, especially for bull fights. In 1387 the canons of the Lateran were allowed to use it for a hospital. After the 14th century it began to be despoiled by the great Roman families, who used its stone to build their palaces. In the time of Sixtus V. it was proposed to turn it into a place of trade, erecting shops under the arcades; but the plan was unsuccessful. Clement XI. endeavored to erect within it a manufactory of saltpetre, but he failed to carry out his design, and was persuaded to finally consecrate it to the memory of the martyrs, thus throwing over it a protection which preserved it from further injury.

COLOSSIANS, Epistle to the, one of the smaller Pauline epistles of the New Testament, addressed to the church of Colossæ. It bears a great similarity to the Epistle to the Ephesians, and is directed against some heretical doctrines which had crept into the Colossian church, and which this epistle represents as endangering the purity of the Christian religion. In the opinion of former exegetical writers these heretical doctrines were the views of Judaistic theosophists, or of some pagan philosophical system; Credner and Thiersch believed a kind of Christian Essenism to be referred to; but the prevailing opinion now is that we find here early traces of Gnosticism. The Pauline origin of the epistle was generally recognized until Mayerhoff (*Der Brief an die Kolosser*, Berlin, 1838) denied its authenticity. He was followed by Schwegler (*Das nachapostolische Zeitalter*, Tübingen, 1845–'6), and by F. C. Baur (*Paulus, der Apostel Jesu Christi*, Stuttgart, 1845). Ewald (*Die Sendschreiben des Apostels Paulus*, Göttingen, 1857) expressed the opinion that the epistle was written by Timothy after receiving from Paul special instructions with regard to the contents. But the great majority of exegetical writers adhere to the tradition of the Pauline origin of the epistle. According to David Schulz (1829), with whom several other modern writers (as Schenkel) agree, the epistle was written during the captivity of Paul at Cæsarea, in 60 or 61; but the almost universal testimony of tradition, according to which it was written by Paul from Rome in 62, is ably defended by Bleek (*Vorlesungen über die Briefe an die Kolosser*, &c., Berlin, 1865) and others.

COLOSSUS (Gr. *κολοσσός*), a statue of gigantic size. Such statues were often erected in ancient times, and many still remain in existence, especially among the ruins of Thebes in Egypt. The most celebrated colossus of ancient or modern time was that at Rhodes. This city had been besieged by Demetrius Poliorcetes, king of Macedon; but, assisted by Ptolemy Soter, king of Egypt, the citizens repulsed their enemies. To express their gratitude to their noble friends, and to their tutelary deity, they erected a brazen statue to Apollo. Chares of Lindus, the pupil of Lysippus, commenced the work; but having expended the whole amount intrusted to him before it was half completed, he committed suicide, and it was finished by Laches. The statue was 105 ft. high, and hollow, with a winding staircase that ascended to the head. After standing 56 years, it was overthrown by an earthquake in 224 B. C., and lay nine centuries on the ground, and then was sold to a Jew by the Saracens, who had captured Rhodes, after the middle of the 7th century. It is said to have required 900 camels to remove the metal, and from this statement it has been calculated that its weight was 720,000 lbs. According to Pliny, Rhodes had 100 colossi of inferior size. The researches of Cesnola in Cyprus have discovered many colossi in that island. Phidias erected several colossi. His Minerva in the Parthenon was 39 ft. high, composed of gold and ivory. Upon the shield was sculptured the battle of the Athenians and Amazons; on the buskins the battle of the centaurs and Lapithæ; on the pedestal, the birth and history of Pandora. He likewise erected for the Eleans a statue of Jupiter 60 ft. high. Lysippus, in the time of Alexander the Great, constructed

at Tarentum a colossal statue, 60 ft. high, which Fabius, on the capture of that city during the second Punic war, was anxious to remove to Rome, but was prevented by its weight. The earliest colossus at Rome was that of Jupiter Capitolinus, in bronze, erected by Spurius Carvilius after his victory over the Samnites; but colossal statues soon became common. Those particularly remarkable were that of Jupiter in bronze upon the capitol; one in bronze of Apollo, at the Palatine library; another in bronze of Augustus, in the *forum Augusti;* a marble statue of Nero, said to have been 120 ft. high, placed in the vestibule of the golden house, afterward supplied with a new head by Vespasian, and converted into an Apollo; and a gilt bronze statue of Domitian as the deity of the sun, in the forum.—There are two statues which belong to recent art deserving the name of colossal. One is the statue of San Carlo Borromeo, at Arona, near the S. extremity of Lago Maggiore, erected in 1697. It stands on a hill. Its pedestal is 40 ft. in height, and the statue itself 66 ft. The head, hands, and feet are cast in bronze; the rest of the figure is formed by laying sheets of hammered copper upon a pillar of masonry. The statue may be entered and ascended; there is sufficient room for three persons inside of the head, and for one person inside of the nose. The other is that of Bavaria, at Munich, in bronze, 61½ ft. high, with a pedestal of 28½ ft.; it was designed by Schwanthaler, and completed in 1850.

COLOT, Laurent, a French surgeon, born at Tresnel, near Troyes, lived in the middle of the 16th century. He was instructed by Octavien Deville, a pupil of Marianus Sanctus, in the art of extracting stone from the bladder. He kept the process secret, and upon the death of Deville was appointed by Henry II. lithotomist at the Hôtel-Dieu. The secret was transmitted to his grandson PHILIPPE (born in 1593, died in 1656), who had an extensive practice in lithotomy. He taught the process to Restitut Girault and Séverin Pineau. FRANÇOIS COLOT, who died June 25, 1706, was instructed in the art by the son of Girault, and wrote a treatise upon the subject (Paris, 1727).

COLQUHOUN, Patrick, a British author, born at Dumbarton, Scotland, March 14, 1745, died in London, April 25, 1820. In early life he went to America, but returned to Scotland in 1756. On the outbreak of the American war he contributed to a fund for raising a regiment against the colonists. In 1782 he was elected chief magistrate of Glasgow. In 1789 he removed to London, and in 1792 was appointed a police magistrate. He published "A Treatise on the Police of the Metropolis" (London, 1796), "A Treatise on the Police of the River Thames," "A New System of Education for the Laboring People," "A Treatise on Indigence," and "On the Population, Wealth, Power, and Resources of the British Empire" (London, 1814). The first and last named works were translated into German.

COLQUITT, a S. W. county of Georgia, bounded E. by the Withlacoochee river, and intersected by the Ocopilco and branches of the Ocklockonee; area, 600 sq. m.; pop. in 1870, 1,654, of whom 137 were colored. The surface is level. The chief productions in 1870 were 24,132 bushels of Indian corn, 11,834 of sweet potatoes, 24,468 lbs. of wool, and 327 bales of cotton. There were 183 horses, 1,804 milch cows, 3,852 other cattle, 9,061 sheep, and 6,348 swine. Capital, Moultrie.

COLT, Samuel, an American inventor, born in Hartford, Conn., July 19, 1814, died there, Jan. 10, 1862. His restless spirit led him even when a child to prefer the work room to the school room, and he entered at the age of 10 a factory belonging to his father, who was a manufacturer of woollen and silk goods. In his 14th year he was sent to school in Amherst, Mass., but ran away and shipped as a boy before the mast for an East India voyage. While at sea he made a model in wood of a revolving pistol, which was the germ of the celebrated weapon bearing his name. This model is still in existence. After his return from Calcutta he familiarized himself with the principles of chemistry under the tuition of the manager of the dyeing and bleaching department in his father's factory at Ware, Mass.; and having become a dexterous manipulator, he travelled through the United States and Canada, giving lectures on chemistry in almost every city. During the two years spent in this way he acquired means sufficient to prosecute his invention. In 1835 he visited England and France and secured patents for revolving firearms, and on his return took out patents in this country. On a subsequent visit to Europe he discovered that there were in the tower of London ancient guns having a rotary chambered breech; and in order to free himself from the imputation of claiming an invention which had previously been made, he read before the institution of civil engineers in England (of which he was the only American associate), in 1851, an elaborate paper on the subject, in which he described the various early revolving firearms, and demonstrated the principles on which his own were constructed. In 1835, with the aid of New York capitalists, he established a company for the manufacture of his arms in Paterson, N. J., with a capital of $300,000. A large amount was expended in machinery and in experiments, but the company did not succeed in securing the general adoption of the weapon, though a few were used with success in the war with the Seminoles in 1837. In 1842 the patent arms company, as it was named, became insolvent, and for five years no revolvers were made. In 1847, during the Mexican war, Gen. Taylor, who had learned the value of the weapon in Florida, sent for a supply, but none were to be found. The government ordered 1,000 to be made. Mr. Colt advertised in vain for one to serve as a model, and was compelled to make a new model, in which he incorpora-

ted improvements suggested by the experience of officers. He manufactured these pistols in an armory at Whitneyville, near New Haven, Conn.; but other orders following, he procured more commodious workshops in Hartford, and began business on his own account. In 1852, finding that his means for manufacturing were insufficient to supply the great demand which had arisen for revolvers, in consequence of the emigration to California and Australia, he purchased 250 acres of low meadow land in the S. part of the city of Hartford, surrounded it with an immense dike to prevent its annual overflow by the river, and began the erection within it of the armory, which has since become one of the most extensive in the world. The original building, which is of Portland freestone, consists of two parallel structures, 500 ft. in length and 60 and 40 ft. respectively in breadth, connected by a central one 250 ft. by 50, the whole being in the form of the letter H. In 1861 a second building, similar in most respects, was erected; and in connection with these are offices, warerooms, and other outbuildings. Within the dike were subsequently built numerous dwellings for workmen and other structures, the whole involving an expenditure of more than $2,500,000. This armory is capable of manufacturing over 1,000 firearms a day. A part of the establishment is devoted to the construction of machinery for making the revolving weapons, and from it were supplied the machines used for that purpose in the armory of the British government at Enfield and in that of the Russian government at Tula. All the accessories of the weapons, balls, cartridges, bullet moulds, powder flasks, lubricators, &c., are made at the armory, from models of Mr. Colt's or developed from his ideas by his workmen. Besides the revolver, Mr. Colt invented a submarine battery for the defence of harbors, which has met with the approval of distinguished naval officers. He devised also a method of insulating submarine telegraphic cables, and in 1843 laid a cable from Coney and Fire islands to the city of New York, which was operated with success. He received from almost all the European governments, and from several Asiatic sovereigns, decorations, medals, diplomas, and other tokens of their appreciation of his merits.

COLTON, Calvin, an American clergyman and political writer, born at Longmeadow, Mass., in 1789, died in Savannah, Ga., March 13, 1857. He graduated at Yale college in 1812, studied theology at Andover, and was ordained and settled in the Presbyterian church at Batavia, N. Y., in 1815. On account of the failure of his voice, he relinquished preaching in 1826, began writing for periodicals, and went to England in 1831 as a newspaper correspondent. On his return in 1835 he published a work entitled "Four Years in Great Britain." About this time he became a member of the Episcopal church, took orders, and wrote a book entitled "Thoughts on the Religious State of the Country, and Reasons for preferring Episcopacy." But soon returning to his former occupation, he distinguished himself as a writer of political pamphlets and fugitive pieces, in which he defended the views of the whig party. Those which had the widest circulation were a series called the "Junius Papers," published originally in 1840, republished in 1844 with additions. He edited a newspaper in Washington from 1842 to 1844; in 1846 published the "Life and Times of Henry Clay;" in 1848, "Public Economy for the United States," containing an elaborate argument in favor of a protective policy; and in 1853, "The Genius and Mission of the Protestant Episcopal Church in the United States." In 1852 he was appointed professor of public economy in Trinity college, Hartford. He also published "Private Correspondence of Henry Clay" (1855), "Last Seven Years of the Life of Henry Clay" (1856), and "Speeches of Henry Clay" (2 vols., 1857).

COLTON, Caleb Charles, an English writer, born in 1780, died by his own hand at Fontainebleau, France, April 28, 1832. He graduated at Cambridge in 1801, was chosen fellow of King's college, and in 1818 obtained the vicarage of Kew and Petersham. But he contracted habits of life which destroyed all the hopes formed from his brilliant abilities. He became a gambler, and was involved in so much embarrassment that he was obliged to flee to America. He afterward went to Paris, where he acted for a time as correspondent of the London "Morning Chronicle." He is said to have won in Paris £25,000 at play within two years; but he committed suicide through apprehension of a surgical operation that had become necessary. His principal works are: "Hypocrisy, a Satirical Poem" (1812); "Napoleon, a Poem" (1812); "Lines on the Conflagration of Moscow" (1816); and "Lacon, or Many Things in Few Words" (1820). The last named is a collection of ethical aphorisms, and is the most popular of his works.

COLTON, Walter, an American clergyman and writer, born in Rutland, Vt., May 9, 1797, died in Philadelphia, Jan. 22, 1851. He graduated at Yale college in 1822, at Andover theological seminary in 1825, and became professor of moral philosophy and belles-lettres in the scientific and military academy at Middletown, Conn. In 1830 he edited a journal in Washington, and in the following year was appointed chaplain in the navy, and ordered to the Mediterranean. While on that station he gathered the materials for his "Ship and Shore in Madeira, Lisbon, and the Mediterranean" (New York, 1835), "Visit to Athens and Constantinople" (1836), "Land and Lee in the Bosporus and Ægean" (1851), and "Notes on France and Italy" (1851). In 1835 he was assigned to the naval station at Charlestown, Mass.; in 1837 he edited the "Colonization Herald," and in 1838 was assigned to the chaplaincy of the naval station at Philadelphia. In 1845 he was ordered to the Pacific coast,

and on July 28, 1846, was appointed alcalde of Monterey in California by the American military authorities. Having discharged the duties of this office for nearly two months under a military commission, he was elected by the citizens of Monterey as alcalde or chief judge, with a jurisdiction extending over 300 m. of territory. He established the first newspaper and built the first school house in California. The first public announcement of the discovery of gold in California was made by him in a letter to the Philadelphia "North American," in May, 1848. He returned to Philadelphia in 1849. His "Deck and Port" and "Three Years in California" were published in 1850; and a volume of "Literary Remains," with a memoir by Henry T. Cheever, in 1851.

COLTSFOOT (*tussilago farfara*), an herb growing wild in Europe and North America; found in this country in the northern and middle states. Though the whole plant is used, its virtue is principally in the leaves. These are



Coltsfoot (Tussilago farfara).

gathered and dried, and used generally in the form of a decoction. Coltsfoot is employed in pulmonary complaints, as a demulcent, often in the form of cough candy. It is said to have been smoked by the ancients in affections of the lungs.

COLUBER, the principal genus of a family of ophidian reptiles, characterized by an elongated head, distinct from the neck, and covered above with smooth polygonal plates; the snout rather rounded; the eyes large, and the pupil round; the body long, cylindrical, and tapering, covered above with rhomboidal scales, generally smooth, but sometimes carinated. The tail has always double plates on the under surface; the plates of the abdomen are transverse; the jaws furnished with numerous sharp teeth, directed backward, without poisonous fangs. Some species are oviparous, others ovoviviparous. In the old Linnæan genus *coluber* were included all ophidians having double plates on the under surface of the tail; this embraced many venomous serpents; the genus has since been restricted by Boie, Schlegel, and others, so that it now forms a very natural one, recognized rather by its general than by any isolated characters. Its numerous species are found in most parts of the globe where any ophidians can exist; they are generally terrestrial, rarely entering the water unless from necessity; most of them climb trees easily, where they lie in wait for their prey; some are found in marshy districts, some in thick woods, some in open sandy plains, and the locality impresses various habits of life upon them; they generally pursue small mammals, birds, and reptiles. They attain a considerable size, sometimes a length of 8 ft. The abdominal plates and the ribs are exceedingly numerous, sometimes as many as 300. The sides of the snout are rarely concave, and the plates over the eye are not very prominent, giving to their physiognomy a gentle expression, which is confirmed by the disposition of many of the species living in the vicinity of man. The colors are rarely brilliant, brown shading into black or green being the prevailing tints; some are striped or spotted, but all undergo considerable changes in their progress to maturity. The genus has since been subdivided into many. Among the best known species is the one dedicated to Æsculapius (*C. Æsculapii*, Lacép.), emblem of the sagacity and health-bestowing qualities of the great physician; and, in this country, the black snake (*bascanion constrictor*, B. and G.), the corn snake (*scotophis guttatus*, B. and G.), the chicken snake (*ophibolus eximius*, B. and G.), the indigo snake (*Georgia Couperi*, B. and G.), the green snake (*chlorosoma vernalis*, B. and G.), and the striped snake (*entænia sirtalis*, B. and G.).

COLUGO. See Flying Lemur.

COLUMBA, called by his countrymen Columb-Kille or Cille ("dove of the cell"), a saint of the Roman Catholic church, styled also the apostle of Caledonia, born at Gartan, Donegal, Ireland, in 521, died in Iona, June 9, 597. His father was of the royal race of Niall or O'Donnell, his mother a princess of the reigning family of Leinster. Educated from boyhood by the priest who had baptized him, he passed into the great monastic school of Clonard, under Finnian, styled *magister sanctorum*, who ordained him deacon, and finished his course in the monastery of Maghbile, Down, under another Finnian or Finbar, afterward bishop of Lucca in Italy. His own wealth and powerful connections enabled him to found in Ireland 37 monasteries before his 25th year. He resided at Derry, superintending the other establishments, and fostering in all the love of rural labor, the culture of sacred and profane letters, and the work of translating the Old and New Testaments. A copy which he had furtively made of a rare manuscript of the psalter involved him in a suit with his old master Finnian, which was carried before the king at Tara, who decided against Columba; and soon after, a young prince of Connaught who had

fled to his monastery for asylum having been taken thence by the king's officers and executed, Columba vowed revenge. He hastened into his native province of Tyrconnell, roused all his kinsfolk to arms, and led them against the king, who was defeated at Cool-Drewny. Excommunicated in a synod for this bloodshed, Columba wandered from monastery to monastery, until his confessor as an expiation of his guilt commanded him to leave Ireland for ever. With 12 companion monks he landed on Iona (then called I or Hy, afterward named from him I-Columb-Kill or Icolmkill), where they built cells and devoted themselves to the bodily and spiritual wants of the inhabitants of this and the neighboring isles and the mainland. Iona being in the territory of an Irish colony of Dalriadians, their prince Connal, a kinsman of Columba, bestowed the island on him in 563. His biographer and contemporary Adamnan describes the moral transformation which took place in him. Subdued by remorse for the blood he had caused to be shed, he sought out guilt and suffering that he might purge away the one and alleviate the other. His reputation grew with his community, and the churches and monasteries which they founded on every side. The Dalriadian colony was renovated in 574. Aidan, Connal's successor, sought Columba on his island to confess his sins, and was there blessed and crowned king by the abbot, the first instance of such a ceremony in the history of the West, and the stone which served Aidan for a seat is now in Westminster abbey. From the territory of the Irish-Scots, Columba and his monks had pushed their missionary excursions into the adjoining districts inhabited by the heathen Picts. The opposition of their king was overcome by a miracle; while miracles of patience and devotion overcame the long resistance of the druids, until all Scotland was Christian, and the monastery of Deir (or "Tears") arose on the remotest shore of Buchan, where it flourished 1,000 years. Ancient traditions attribute to Columba the foundation of 300 monasteries or churches. Modern learning has discovered and registered the existence of 90 churches whose origin goes back to him. King Aidan was still held tributary to Ireland; and at his urgent solicitation and that of the Irish communities which had never ceased to regard Columba as their superior, he consented to visit Ireland. A parliament was held in Drumkeath, the king of Ireland and Aidan presiding; princes, nobles, bishops, and abbots discussed for a whole year the interests of church and state. The tribute was remitted to the Dalriadian prince, and his thorough independence acknowledged; the institution of the bards was saved from outlawry, old feuds were healed, a solid basis for future concord was established, and salutary laws were enacted. Columba maintained exact discipline in all his houses. The time not given to missionary labors, prayer, and chanting the divine office, was devoted to manual and intellectual labor. Agriculture was a prime necessity for the monks, and they taught it to the people. Out of doors they labored in the fields, built or repaired churches and monasteries, and constructed wicker boats covered with hides, in which the missionaries ventured to the Faroe isles and to Iceland. Indoors they transcribed the classics, and copied and illuminated the Bible. In all these duties Columba was foremost to the very last; his cell in Iona remaining until his 76th year what it had been at first, made of willow rods and hay, with the bare ground for a bed and a stone for pillow. He died suddenly, having before predicted the hour, while celebrating the midnight office. His life and the fragments of his poems are in Montalembert's "Monks of the West."

COLUMBANUS, a saint of the Roman Catholic church, born in Leinster, Ireland, in 543, died at Bobbio, Italy, Nov. 21, 615. Educated with great care from childhood, he fled from his native place to avoid the dangers to which his personal beauty exposed him, became a monk in the great monastic school of Bangor, and finally in 575 with 12 companions passed over into Brittany, and thence into Gaul. After sojourning for a time in various provinces, where his preaching, charity, and the pure life led by himself and his companions did much to revive religion, he was invited by King Gontran to fix his abode in Burgundy. He chose the ancient Roman castle of Annegray, near Faucogney, in the present department of Haute-Saône. It was in a forest, where after great hardships a monastery was built, the ground cleared and cultivated, and a large community sprung up. Soon their increasing number forced him to beg another residence from the royal favor, and he chose in 590 Luxeuil, the site of another Roman castle, at the foot of the Vosges, and on the confines of Austrasia and Burgundy, and another at Fontaines. Noblemen flocked to Columbanus in such numbers that he was able to establish the *laus perennis*, or perpetual praise, successive choirs of monks singing unceasingly night and day the praise of God. At length a double storm burst upon him: from the bishops, who desired him and his monks to abandon their manner of celebrating Easter; and from Queen Brunehaut and her grandson Thierry, whom Columbanus reproved openly, the king for his licentious life, and the queen for pandering to the king's vices in order to rule in his stead. Banished from Burgundy with all his Irish monks, Columbanus embarked for Ireland, but was cast by a tempest on the shores of Brittany. Thence he proceeded to Laon, where the king of Neustria, Clotaire II., held his court; he reproved him and his mother Fredegonda for their disorders, but was favored and encouraged by both. Having made up his mind to pass over into Italy with his companions, he set out from Laon to Metz, the capital of Theodebert, king of Austrasia. On his way through Cham-

pagne and Brie clergy, nobility, and people flocked around him, his journey to Metz becoming one unbroken series of preachings, conversions, and foundations. He resolved on his way to Italy to convert the Rhine provinces of Austrasia. Embarking below Mentz, he ascended the river, landing and preaching on his way, and finally established himself at Bregenz, on the lake of Constance. The Alemanni and Suevi, who held all eastern Helvetia, were worshippers of Wodin, violent and cruel in their disposition. A monastery was built, and for three years Columbanus labored to make the idolaters give up their gods. At length his protector Theodebert fell into the hands of Brunehaut, who put him to death, and compelled Columbanus to fly. His disciple Gall remained behind to found the great monastic school which bears his name. Columbanus, crossing by the St. Gothard pass, arrived in Lombardy, where he immediately commenced preaching against the Arian heresy. King Agilulf bestowed upon him the territory of Bobbio on the banks of the Trebbia, where he set about erecting a church and monastery. Clotaire II., having vanquished Thierry and Brunehaut, sent a deputation to Bobbio pressing Columbanus to return to Gaul, but in vain. Wishing to withdraw from all human intercourse some time before his death, Columbanus hid himself in a cavern in the Apennines, returning to the monastery only on Sundays and holidays. The excessive bodily punishment imposed on offenders by his rule, with other imperfections, soon caused it to be superseded in all his monasteries by the rule of St. Benedict.—His *Regula Cœnobitalis cum Pœnitentiali* is contained in the *Codex Regularum*, with the notes of the Benedictine Hugues Menard (Paris, 1638). The collection of his works was published by Sirin, with the notes of Fleming (fol., Louvain 1667); also a Latin poem in vol. ii. of Sirmond's *Œuvres diverses*. A life of St. Columbanus and his disciples Attalus and Bertulfus was written in Latin hexameters in the 10th century by Flodoart, canon of Rheims. See also A. Gianelli, *Vita di S. Colombano* (Turin, 1844); and Montalembert's "Monks of the West."

COLUMBIA, the name of seven counties in the United States. **I.** An E. S. E. county of New York, bounded E. by Massachusetts, and W. by the Hudson river; area, 620 sq. m.; pop. in 1870, 47,044. In the E. part the surface is hilly, but in the W. and central portions it is generally level. The soil is fertile and highly cultivated. Iron, lead, limestone, slate, and marble are obtained in various places, and at New Lebanon are warm springs which are much resorted to. It is traversed by the Hudson River, the Harlem, the Boston and Albany, and the Hudson and Boston railroads. The chief productions in 1870 were 3,932 bushels of wheat, 426,408 of rye, 336,281 of Indian corn, 942,307 of oats, 108,971 of buckwheat, 678,480 of potatoes, 112,878 tons of hay, 1,227,274 lbs. of butter, 233,196 of wool, and 58,193 of hops. There were 9,101 horses, 14,030 milch cows, 11,704 other cattle, 53,798 sheep, and 8,865 swine; 13 manufactories of cotton goods, 2 of drugs and chemicals, 7 of hosiery, 3 of pig iron, 7 of iron castings, 20 of paper, 2 of woollen goods, 3 breweries, 32 flour mills, 44 manufactories of carriages and wagons, 9 of agricultural implements, 3 of bricks, 10 of machinery, 19 of saddlery and harness, 17 of tin, copper, and sheet-iron ware, 8 of cigars, and 6 saw mills. Capital, Hudson. **II.** An E. county of Pennsylvania, intersected by the N. branch of the Susquehanna, and drained by Catawissa and Fishing creeks; area, 375 sq. m.; pop. in 1870, 28,766. Knob mountain, Catawissa mountain, and the Muncy hills, which traverse the county, are branches of the Alleghany range, and are wholly unproductive. The valleys lying between them are very fertile, and some of the uplands are also fit for cultivation. Limestone and iron ore are found in great abundance. The North Branch canal, and the Catawissa and the Lackawanna and Bloomsburg railroads traverse the county. The chief productions in 1870 were 240,759 bushels of wheat, 50,616 of rye, 589,472 of Indian corn, 406,031 of oats, 82,676 of buckwheat, 182,124 of potatoes, 22,132 tons of hay, 468,398 lbs. of butter, and 22,337 of wool. There were 4,718 horses, 5,615 milch cows, 4,718 other cattle, 6,823 sheep, and 11,911 swine; 4 flour mills, 3 planing mills, 2 manufactories of machinery, 1 of cars, 2 of pig iron, 8 of iron castings, 19 of carriages and wagons, 9 of lime, 4 of woollen goods, 7 saw mills, and 12 tanneries. Capital, Bloomsburg. **III.** An E. county of Georgia, separated from South Carolina by the Savannah river, bounded N. W. by Little river, and traversed by the Georgia railroad; area, 500 sq. m.; pop. in 1870, 13,529, of whom 9,449 were colored. It has an uneven surface, and a soil once fertile but impaired by improper tillage. A gold mine near Little river has been worked. The chief productions in 1870 were 8,699 bushels of wheat, 121,160 of Indian corn, 11,864 of oats, 15,092 of sweet potatoes, 46,311 lbs. of butter, and 7,434 bales of cotton. There were 910 horses, 1,219 mules and asses, 2,058 milch cows, 3,858 other cattle, and 7,997 swine. Capital, Appling. **IV.** A N. E. county of Florida, bordering on Georgia, bounded S. by the Santa Fé and N. W. by the Suwannee river; area, 864 sq. m.; pop. in 1870, 7,335, of whom 3,228 were colored. The surface is level, and the soil light and sandy. Pine forests cover a considerable part of the county. The Jacksonville, Pensacola, and Mobile railroad passes through it. The chief productions in 1870 were 103,317 bushels of Indian corn, 24,798 of oats, 32,316 of sweet potatoes, 15,526 gallons of molasses, and 1,264 bales of cotton. There were 733 horses, 3,562 milch cows, 7,168 other cattle, 1,654 sheep, and 8,957 swine. Capital, Lake City. **V.** A S. W. county of Arkansas, bordering on Louisiana, watered by

Bayou Dorcheat; area, about 950 sq. m.; pop. in 1870, 11,397, of whom 3,718 were colored. In 1871 a portion was taken to form Nevada co. The surface is level, and the soil fertile. The chief productions in 1870 were 3,149 bushels of wheat, 245,388 of Indian corn, 48,024 of sweet potatoes, and 5,565 bales of cotton. There were 1,042 horses, 944 mules and asses, 2,217 milch cows, 3,889 other cattle, 5,472 sheep, and 13,652 swine. Capital, Magnolia. **VI.** A S. county of Wisconsin, intersected by the Wisconsin and Neenah rivers; area, 751 sq m.; pop. in 1870, 28,802. The surface is rolling or hilly, and the soil rich. The Wisconsin is navigable by steamboats to Winnebago Portage, whence a canal connects it with the Neenah, 1½ m. distant. The Milwaukee and St. Paul railroad crosses the county. The chief productions in 1870 were 1,517,332 bushels of wheat, 40,844 of rye, 528,541 of Indian corn, 678,907 of oats, 51,745 of barley, 202,068 of potatoes, 44,184 tons of hay, 706,516 lbs. of butter, 168,255 of wool, and 230,762 of hops. There were 9,758 horses, 9,659 milch cows, 10,628 other cattle, 40,413 sheep, and 11,743 swine; 3 manufactories of boots and shoes, 13 of carriages and wagons, 2 of bricks, 8 of saddlery and harness, 4 flour mills, 6 breweries, 2 planing mills, 2 saw mills, and 2 leather-currying establishments. Capital, Portage City. **VII.** A N. W. county of Oregon, bounded N. and E. by the Columbia river, separating it from Washington territory, and watered by the Klaskanine; area, 470 sq. m.; pop. in 1870, 863. The W. border is mountainous. Coal and iron are found; the soil is good. The chief productions in 1870 were 1,619 bushels of wheat, 1,169 of Indian corn, 2,260 of oats, 10,337 of potatoes, and 1,850 tons of hay. There were 307 horses, 724 milch cows, 1,303 other cattle, 1,602 sheep, and 1,206 swine. Capital, St. Helens.

COLUMBIA, a city of Lancaster co., Penn., situated on the Susquehanna river, at the terminus of the Philadelphia and Columbia railroad, and of the eastern division of the state canal; pop. in 1870, 6,461. The Columbia branch railroad connects it with Harrisburg, and another with York and Baltimore. It is the principal depot of the lumber which is rafted down the Susquehanna. There are two weekly newspapers and several churches.

COLUMBIA, a city, capital of South Carolina, and seat of justice of Richland county, situated on the E. bank of the Congaree, just below the falls, and at the confluence of the Broad and Saluda rivers, 100 m. N. W. of Charleston; pop. in 1860, 8,052; in 1870, 9,288, of whom 5,295 were colored. The Congaree is navigable to this point, and there is ample communication with the surrounding country by means of the South Carolina, the Greenville and Columbia, the Charlotte, Columbia, and Augusta, and the Wilmington, Columbia, and Augusta railroads. There is an iron bridge over the Congaree, immediately opposite the city, connecting the counties of Richland and Lexington, recently rebuilt at a cost of $40,000; while the approach on the north and west is aided by the Broad river bridge, 1,054 ft. long. Columbia occupies a plain some 200 ft. above the bed of the river, and before the civil war was one of the handsomest places in the south; it was laid out in regular squares, well built, with streets 100 ft. wide, and covered an extent each way of more than 2 m. The view from Arsenal hill is very beautiful. Sydney park contains about 25 acres of ground handsomely laid out in plots, and adorned with trees and shrubbery. The streets are abundantly shaded, and there are many splendid drives in the vicinity. The fair grounds of the South Carolina agricultural and mechanical society, in the N. W. suburbs, are well supplied with fountains and fish ponds, and contain about 30 acres. A race course is attached to them, and large fields for the exhibition of agricultural implements. The principal building is 175 ft. long and 135 deep, with an amphitheatre in front capable of seating 3,000 persons. The new state house, of granite, occupies an eminence in the centre of the city. Though unfinished, it has been covered with a temporary roof, and is now occupied. It has cost upward of $3,000,000, and about $1,000,000 will be required to complete it. The executive mansion has grounds laid out in walks, gardens, and drives, and commands a full view of the Congaree valley. The new city hall, in process of construction, will be of brick, three stories high, with a Mansard roof, and a tower at each end; besides the city offices, it will contain an opera house capable of seating 1,500 persons. The United States court house and post office, also in process of construction, will be of granite, three stories high, with a Mansard roof, and a tower. The market house, near the centre of the city, is a one-story brick building, about 150 ft. long, well ventilated and conveniently arranged. The gas works occupy an acre of ground, and consume annually about 800 barrels of rosin and 500 cords of wood. The gas produced gives a steady and brilliant light. The water power is extensive. Canals were early constructed around the falls, to improve the navigation of the river, which were sold by the state in 1868 to Senator Sprague of Rhode Island. The principal manufacturing establishments are 4 iron works, which produce steam engines, machinery, cotton presses, iron railings and building fronts, bells, and iron and brass castings; an oil factory, producing and refining about 3,000 gallons of cotton-seed oil per week; 2 manufactories of sashes, doors, and blinds; 1 of brooms, 1 of blank books, and a brewery. The car shops of the Charlotte, Columbia, and Augusta railroad occupy four acres of ground, and furnish locomotives, cars, and machinery for the use of the road. In the vicinity of Columbia are forests of yellow pine, oak, walnut, maple, poplar, &c., furnishing material for 15 or 20

saw mills, which produce about 5,000 ft. of lumber a day. The high bluffs of the river supply material for good bricks, and two companies are engaged in the manufacture. Excellent granite exists within the city limits, and is used in the construction of the public buildings. There are three national banks, with a capital of $500,000; a bank and trust company, capital $200,000; and two savings banks, with $644,000 capital. The South Carolina penitentiary, begun in 1867, occupies a plot of 20 acres, at the junction of the Broad and Saluda rivers, within the city limits. It is to be five stories high, with two wings, each containing 250 cells. Each cell is 5 ft. wide, 8 ft. long, and 7 ft. high. The number of prisoners, Oct. 31, 1872, was 224, of whom 10 were females; 90 per cent. were colored. They are employed in the garden, carpenter, blacksmith, and shoe shops, marble works, weaving rooms, and broom factory attached to the institution, and in quarrying the granite for the building, as well as in its erection. The lunatic asylum, situated in the N. E. part of the city, occupies two principal buildings. That for the use of female patients is four stories high, and consists of two wings, with a centre building rising above them, crowned by a cupola. It can accommodate more than 100 patients. The building occupied by the men is about 300 yards from the other, and has capacity for 120 patients. An additional wing 100 ft. long, 40 ft. wide, and 4 stories high, is in process of construction. There are also smaller buildings for the colored patients. The asylum in 1871 contained 285 inmates, of whom 90 were white males, 45 colored males, 115 white females, and 35 colored females. It is a well appointed institution, supported principally by the state. The grounds, 4 acres in extent, are surrounded by an enclosure, and beautified with gardens, hothouses, and walks. The university of South Carolina, founded in 1804, has an observatory connected with it. The grounds are about 12 acres in extent, and the buildings are substantially constructed of brick. In 1871 it had 14 instructors, 70 students, and a library of 27,000 volumes. The Presbyterian theological seminary, founded in 1831, had 7 professors, 41 students, an endowment of $145,715, and a library of 18,340 volumes; the Lutheran theological seminary, founded in 1859, had 2 professors, an endowment of $29,000, and a library of 4,000 volumes. The Columbia male academy, founded in 1785, is in a flourishing condition. The Ursuline convent at Valle Crucis, 2 m. from Columbia, has 20 inmates, who conduct a female seminary, and also have under their charge a day school in the city. The public school system is in its infancy, and is hampered by lack of funds; but in 1871 there were 10 free schools, with 32 teachers and 1,029 pupils. The state library contains about 3,000 volumes. There are 2 daily, 1 tri-weekly, and 7 weekly newspapers, and a monthly and a quarterly periodical. There are 10 or 15 churches, several of which are for colored people. The denominations represented are the Baptist, Episcopal, Lutheran, Methodist, Presbyterian, and Roman Catholic.—Columbia became the capital of the state in 1790, under an act of the legislature of March 22, 1786, which provided for the founding of the city. Toward the close of the civil war it was entered by the forces under Gen. Sherman, Feb. 17, 1865. Shortly before a large amount of cotton had been taken from the warehouses and piled in the streets, preparatory to removing it outside the city and burning it, to prevent its falling into the hands of the Unionists. This not having been effected, however, on the evacuation of the city by the confederate troops under Gen. Wade Hampton, the cotton was set on fire as it lay, whether by accident or design is unknown. Under the influence of a high wind, the flames spread rapidly, and 84 of the 124 blocks of the city, containing over 500 buildings and embracing the entire business quarter, were burned. The old state house, containing the legislative library of 25,000 volumes, five churches, the Ursuline convent, and the railroad depots were consumed. The city has been rapidly rebuilt, and is increasing in population.

COLUMBIA, the capital of Maury co., Tennessee, on the left bank of Duck river, 38 m. S. by W. of Nashville; pop. in 1870, 2,550, of whom 1,108 were colored. The surrounding country is fertile and productive. It is the seat of Jackson college, a female athenæum, female institute, and conference college. A weekly newspaper is published here. There are two banks, with $200,000 capital. Columbia was the residence of President Polk previous to his election. It was at one time the capital of the state. The Nashville and Decatur railroad passes through it.

COLUMBIA, a village, capital of Boone co., Missouri, 115 m. W. N. W. of St. Louis; pop. in 1870, 2,236, of whom 798 were colored. It is situated in a populous and fertile region, and is the seat of the state university. The university building is a large and elegant structure, erected at the expense of the citizens of the county. In 1871 it had 12 instructors, 217 students, of whom 40 were females and 118 were in the preparatory department, and a library of 5,000 volumes. There are two weekly newspapers. A branch of the North Missouri railroad terminates here.

COLUMBIA, British. See British Columbia.

COLUMBIA, District of. See District of Columbia.

COLUMBIA COLLEGE, a seat of learning in the city of New York, originally called King's college. The institution comprises an academic department, law school, medical school, and school of mines. The government of the college proper is vested in 24 trustees. Besides the president, there are 9 professors and 2 tutors. The professorships are: 1, Greek language and literature; 2, German language and

literature; 3, chemistry; 4, mathematics; 5, mathematics and astronomy; 6, philosophy and English literature; 7, mechanics and physics; 8, Latin language and literature; 9, evidences of natural and revealed religion. Each student is required to devote fifteen hours a week to scholastic exercises. During the senior year eight hours a week are assigned to required and seven hours to elective studies. The elective studies are Greek, Latin, physics, calculus, psychology, technology, and organic chemistry; two hours a week are allotted to each of the four first named and three hours to each of the others. The course of study is four years, at the end of which period the degree of bachelor of arts is conferred upon those students who have passed successful examinations. The academic year, which is divided into two terms, begins on the first Monday in October, and closes with commencement day on the last Wednesday in June; there being a vacation of two weeks about Christmas. There are two public examinations annually of all the classes, one in February, and the other at the close of the academic year. Private examinations are held monthly in all the classes, and there is an examination for honors at the end of each year, open to members of the senior class. The annual tuition fee is $100; by a vote of the trustees this charge may be remitted to indigent students. In 1873 the number of students thus receiving instruction free was 24. Prizes amounting to $450 are annually awarded upon examination for proficiency in Greek; in German, $100; in studies relating to theology, $50; and "to the most faithful and deserving student of the graduating class," $50. By means of free scholarships established by the college, certain societies and corporations, including each religious denomination in the city of New York, may send students to be educated free of charge. By a recent resolution of the board of trustees, twelve scholarships have been established of the annual value of $100 dollars each, and two fellowships of the annual value of $500 each. The fellowships are one in science and one in literature, which are open to competition by the senior class. The fellows are required to continue their studies for three years wherever they may choose, but under the direction of the president of the college. The law school was opened in 1858, since which time 930 students have graduated. The plan of instruction combines the study of selected text books with lectures. There are four professors, viz.: of municipal law, of constitutional history and public law, of ethics, and of jurisprudence and medical jurisprudence; and lectures are also delivered by prominent members of the New York bar. The course of study occupies two years, and a third year, or post-graduate course, has been organized for those students who may desire to pursue their studies beyond the regular course. Two moot courts, with a professor as presiding officer, are held every week of the term, at each of which a cause previously assigned is argued by six students. The term commences on the first Wednesday in October, and continues till May 15. Three prizes, aggregating $500, are annually awarded upon examination to such students as shall have attained the highest excellence in their respective classes. The tuition fees are $100 a year. The degree of LL. B. is conferred upon those students who have pursued the entire course of study, and have passed the requisite examination. By the provisions of an act of the legislature of New York, graduates of this law school are admitted to practice in all the courts of the state on receiving the college diploma.—The school of mines was established in 1864, and in 1873 had 21 professors and instructors. The course of instruction occupies three years. Those who complete it receive the degree of engineer of mines, civil engineer, or bachelor of philosophy. There is a post-graduate course of one year for the degree of doctor of philosophy, and a preparatory course for candidates not qualified to enter the first year. The year is divided into two sessions. The first commences on the first Monday in October; the second on the 16th of February. The lectures close on the last Friday of May, and are followed by an examination on the studies of the year. There are five parallel courses of study: 1, civil engineering; 2,



Columbia College.

mining engineering; 3, metallurgy; 4, geology and natural history; 5, analytical and applied chemistry. The plan of instruction includes lectures and recitations in the several departments of study; practice in the chemical and metallurgical laboratories; projects, estimates, and drawings for the establishment of mines, and for the construction of metallurgical and chemical works; reports on mines, industrial establishments, and field geology. Written and oral examinations are held at the end of each session. During the vacation, at the close of the first and second years, students are required to prepare and submit memoirs on subjects assigned to them by the faculty, and journals of travel, containing descriptions of mines and metallurgical or chemical works visited, and any interesting mineralogical or geological observations they may have made. The fee for the full course is $200 a year for each student; but those unable to pay may be admitted without charge. The library contains more than 2,000 volumes of works on science, besides the current literature of Europe and America relating to science. The various cabinets include 500 crystal models; 10,000 specimens of minerals; a complete collection of metallurgical products, illustrating the different stages of the typical processes in use in the extraction of each metal in Europe and America; an extensive collection of models of furnaces; several thousand specimens of materials and products, illustrating applied chemistry; and a geological collection embracing over 60,000 specimens.—The total amount invested by Columbia college for purposes of instruction is $591,850, in addition to which it owns real estate and personal property amounting to $4,184,426. The college debt in 1872 amounted to $1,240. The income for the year ending Sept. 30, 1872, was $240,405 12, and the expenditures were $172,240. The medical school is not included in these returns. The general library of the college in 1873 contained 16,364 volumes; law library, 3,860 volumes; library of the school of mines, 2,140 volumes; botanical library, 1,000 volumes. The herbarium, presented to the college by Dr. John Torrey, is valued at about $15,000, and the chemical and the philosophical apparatus at nearly $100,000. According to the triennial catalogue of 1870, the total number of graduates of all the schools was 3,834, of whom 2,721 were living. There were 2,109 graduates in arts, 868 in medicine, 487 in law, 37 in mining, and 333 honorary graduates. In 1873 there were 123 students in the academic department, 371 in the law school, 136 in the school of mines, and 359 in the medical school.—In 1746 an act was passed by the colony for raising £2,250 by lottery "for the encouragement of learning, and toward the founding of a college." By other similar acts this sum was increased in 1751 to £3,443, and vested in ten trustees, one of whom was a Presbyterian, two were of the Reformed Dutch communion, and seven were Episcopalians, some of whom were also vestrymen of Trinity church. In 1753 the trustees invited the Rev. Dr. Samuel Johnson, of Stratford, Conn., to become the president of the proposed college. The royal charter constituting King's college passed the seals Oct. 31, 1754, but the organization of the college under it was not effected till May 7, 1755, when the charter was presented by Lieut. Gov. De Lancey to the persons named in it as governors of the college, who consisted of the archbishop of Canterbury, the principal civil officers of the colony, the principal clergy of the five religious denominations in the city, and 20 private gentlemen. Money was collected in England, and books were sent out. The college, however, had opened July 17, 1754, with a class of eight, under Dr. Johnson's own instruction, in a vestry room belonging to Trinity church. The corner stone of the college building was laid Aug. 23, 1756, on the block now bounded by Murray, Church, and Barclay streets, and College place, and intersected by Park place. An English traveller described it as facing the Hudson, and being "the most beautifully situated of any college in the world." On June 21, 1758, the first commencement was held, when 10 bachelors and as many masters of arts were graduated. The students began to lodge and mess in the college building in May, 1760, and on June 26 the procession moved from there to St. George's chapel to hold the third commencement. At Dr. Johnson's request, the Rev. Myles Cooper, fellow of Queen's college, Oxford, was sent out in 1762 by the archbishop of Canterbury, and appointed fellow of the college, professor of moral philosophy, and to assist the president in instruction and government, with the understanding that he was to succeed him, which he did the following year. In 1767 a grant of land was made to the college of 24,000 acres, which was subsequently lost in consequence of lying in that part of the colony afterward set off to constitute a portion of Vermont. The instruction appears to have been conducted by the president and three tutors or professors, who were always able men, till 1767, when a faculty of medicine was created, consisting of six professors of great eminence. The chief studies were natural law, physic, logic, ethics, metaphysics, mathematics, natural philosophy, astronomy, geography, history, chronology, rhetoric, Hebrew, Greek, Latin, modern languages, and the belles-lettres. To the college was also annexed a grammar school for the due preparation of those who proposed to complete their education in the arts and sciences. Dr. Cooper was a strong loyalist, and had a pamphlet controversy with his pupil Alexander Hamilton. At length his politics became so obnoxious that the college was attacked by a mob in the night of May 10, 1775, and he was obliged to flee for his life. Six days after his escape the Rev. Benjamin Moore, afterward

bishop of the diocese, was made president *pro tem.* In 1776 the college was ordered by the committee of safety to be prepared for the reception of troops. The students were dispersed, the library and apparatus deposited in the city hall, and in consequence lost, and the building became a military hospital. Six hundred volumes were recovered 30 years after in a room in St. Paul's chapel, their existence having been known only to the sexton. The library had received, among great numbers of valuable presents, a copy of every work from the university press of Oxford. This state of things continued for eight years. In 1784 regents of a state university were appointed, of which the governor, Clinton, was chancellor, who demanded and received what property belonged to King's college, the name of which was changed to Columbia college by the same act which gave them the power. The regents organized four faculties: a faculty of arts, with seven professors; one of divinity, with such professors as might be established by the different religious societies within the state; a faculty of medicine, of seven professors; and one of law, of three. Besides all these, there were to be nine extra professors, a president, secretary, and librarian. For several years there was no president, his duties being discharged by the professors in turn. There were no funds to carry out the scheme of the regents. In 1787 the original charter was confirmed to Columbia college, and it was placed under the care of 24 trustees. These held their first meeting May 8, 1787, and on the 21st elected William Samuel Johnson, LL. D., son of the first president, and one of the most eminent lawyers and statesmen of the day, as president. In 1792 there was a full corps of professors, including one of oriental languages, one of natural history, chemistry, agriculture, and botany, occupied by Dr. Mitchill, and one of law, by James Kent. Dr. Johnson resigned in 1800, and was succeeded by the Rev. Dr. Wharton of Philadelphia. It is believed, however, that Dr. Wharton never entered upon the duties of the office. From this period the president took no part in the instruction, but exercised only a general supervision; and under this arrangement Bishop Moore accepted the presidency, Dec. 31, 1801. He did not reside in the college, nor on ordinary occasions take part in the discipline. In 1810 a new charter was obtained. In June, 1811, Bishop Moore having resigned, the Rev. William Harris was elected president, and the Rev. Dr. John M. Mason provost, the statutes of the college having been altered for the latter purpose. In 1812 Dr. Mason was also elected a trustee, a previous act of the legislature allowing it having been obtained. He was one of the most learned of the clergy of his time, and distinguished for the life and interest which he gave to the exercises of the lecture room. On Nov. 1, 1813, the medical school was incorporated with that of the college of physicians and surgeons. Dr. Mason resigned in 1816, and the office he held was discontinued. In 1817 the college received from the state the gift of the botanic garden ground, and a little after a grant of $10,000. In 1823 the Hon. James Kent delivered the course of lectures which were the basis of his celebrated commentaries. Upon the resignation of President Harris in 1829, William A. Duer, LL. D., was made president. He resigned in 1842, and was succeeded by Nathaniel F. Moore, LL. D., who was succeeded in 1849 by Charles King, LL. D. In 1830 the college opened a "scientific and literary course," accessible to others besides matriculated students, and professors were appointed in engineering, analytic chemistry, and other branches. This course was discontinued in 1843 for want of patronage. The power to endow and nominate to new professorships was extended to religious bodies and individuals, and some 20 free scholarships were constituted, to be in the gift of various religious and civil corporations in the city. In 1843 a professorship of German was founded by a bequest of $20,000 from Mr. Frederick Gebhard. In 1857 the college was removed to its present location in 49th street, the building formerly occupied by the institution for deaf mutes being fitted up for that purpose. The college grounds comprise the block bounded by Madison and Fourth avenues and 49th and 50th streets. In 1858 the law school was opened in Lafayette place. From 1813 to 1860 there was no faculty of medicine; but in the latter year it was revived by the adoption of the college of physicians and surgeons as the medical department of Columbia college. This college is situated on the corner of 23d street and Fourth avenue. The connection, however, is little more than nominal, as the medical college is governed by an independent board of trustees. In 1864 President King resigned, and was succeeded by the Rev. Frederick A. P. Barnard, LL. D., who still retains the office (1873). In 1872 the college purchased at a cost of $375,000 nearly ten acres of land near 160th street, on Washington Heights, extending from the Boulevard to the Hudson river, as a possible future site of the institution.

COLUMBIA (or **OREGON**) **RIVER,** a river of N. W. America, rising in Otter lake on the W. slope of the Rocky mountains, in British Columbia, in lat. 50° 30′ N., lon. 116° W. It flows N. W. to lat. 52° 10′, where it receives the Canoe, which rises in about lat. 52° 40′, then turns W. and S., and flows in a general S. direction to the boundary of the United States, whence, entering Washington territory, its course lies through the great plain between the Cascade and Rocky mountains to the 46th parallel. Here turning somewhat abruptly, it flows in a general W. direction, forming the boundary between Washington territory and Oregon, and falls into the Pacific in about lat. 46° 15′, lon. 124° W. There is a remarkable bend in lat. 47° 55′, lon. 118° 10′, where the river turns

nearly due W., and continues in that direction about 120 m. to the mouth of the Okinakane. It then flows S. W. about 50 m., when it turns S. E., and flows in that direction about 165 m. to the 46th parallel. Throughout its entire length the Columbia is very rapid, often passing through mountain gorges and broken by many cataracts. The tide sets up 165 m. to the Cascades, which are a series of rapids caused by the passage of the stream through the Cascade range. At a distance of about 30 m. from the ocean the river expands into a kind of bay from 3 to 7 m. wide, which forms its mouth. At low tide there is about 20 ft. of water over the flats at the entrance to this bay, while the depth of the channel is 24 ft. Ocean steamers can ascend to Vancouver, 115 m. above the mouth, and steamers of 200 or 300 tons to the Cascades, around which there is a railroad 6 m. long. The Dalles, 40 m. further, again obstruct navigation. Here the river bends like a horseshoe to the south, and flows with a rapid current through a basaltic trough with walls 20 ft. high and 200 yards apart. Other falls, with stretches of navigable water between, are Priest rapids, 179 m. above the Dalles; Buckland rapids, 66 m. further; and Kettle falls, 274 m. above. The last is a perpendicular fall of 15 ft. At high water (from the middle of May to the middle of July) steamers could probably ascend from the Dalles to Kettle falls. Above Kettle falls the river is again navigable about 50 m. to falls just N. of the 49th parallel. Above the head of Upper Arrow lake, lat. 50° 30′, there is no navigable water. At Vancouver the Columbia is a mile wide. Its total length is over 1,200 m. The rise at Vancouver during high water is 19 or 20 ft., and so great is the force of the current as to overcome the effect of the tide, and render the water drinkable even on the bar. The principal E. branches are the Kootenay (also called McGillivray or Flat Bow), which joins the Columbia in British territory about 20 m. N. of the boundary; Clarke's, or Flathead river; the Spokane; and Lewis fork (also called the Saptin or Snake river), which is the great southern tributary, and rises in the Rocky mountains in W. Wyoming, about lat. 44°, lon. 110° 30′. The tributaries from the west are smaller; the chief are the Nehoialpitkwu, Okinakane, and Yakama. Below the great bend several streams empty into the Columbia from the north, the largest of which is the Cowlitz; from the south it receives the Umatilla, John Day's river, the Des Chutes, and the Willamette.—Columbia river was discovered in 1792 by Capt. Robert Gray, who entered it May 11 of that year, in the Columbia Rediviva, of Boston, Mass. It was from this vessel that the river received its name. The first exploration of the Columbia was made in 1804–'5, by Captains Lewis and Clarke, under the direction of the war department.

COLUMBIANA, an E. county of Ohio, separated from Pennsylvania on the S. E. by the Ohio river, and drained by several streams; area, 490 sq. m.; pop. in 1870, 38,299. The southern portion is hilly, the northern level or gently undulating. The soil is fertile. Coal and iron are found. It is traversed by the Sandy and Beaver canal, and by the Cleveland and Pittsburgh, the Pittsburgh, Fort Wayne, and Chicago, and the New Lisbon railroads. The chief productions in 1870 were 270,190 bushels of wheat, 25,175 of rye, 566,242 of Indian corn, 653,001 of oats, 163,484 of potatoes, 45,301 tons of hay, 848,882 lbs. of butter, 573,561 of wool, and 602,978 of flax. There were 8,827 horses, 9,519 milch cows, 9,137 other cattle, 131,527 sheep, and 15,996 swine; 8 flour mills, 18 manufactories of stone and earthen ware, 6 of machinery, 1 of pig iron, 10 of iron castings, 4 of agricultural implements, 8 of bricks, 20 of carriages and wagons, 2 of hardware, 2 of lightning rods, 15 of saddlery and harness, 12 of tin, copper, and sheet-iron ware, 3 of woollen goods, 4 planing mills, 9 saw mills, 17 tanneries, and 16 currying establishments. Capital, New Lisbon.

COLUMBIUM, a metal extracted from the mineral columbite, found in Connecticut. It was first discovered by Mr. Hatchett in 1801, and is identical with the metal called by Rose niobium. Tantalum, afterward extracted by a Swedish chemist from the mineral tantalite, was long supposed, on the authority of Wollaston, to be the same substance, but is now known to be distinct from it. Columbium is of a yellowish white or gray color, and when burnished has a metallic lustre. The name was probably given from its being originally discovered in North America.

COLUMBO, or **Calumba,** the root of *cocculus palmatus* or *jateorrhiza palmata*, and of *J. calumba*, climbing plants of the order *menispermaceæ*, growing in Mozambique. The root is cut into transverse slices, which are from an eighth of an inch to near an inch in thickness, from one to two inches in diameter, and when of good quality of a tolerably bright yellow color in the cortical portion, somewhat lighter in the interior, and covered with a brownish wrinkled epidermis externally. Columbo contains a crystallizable neutral bitter principle, called colombine, and an alkaloid, berberina. Its medical virtues are those of a pure bitter, slightly if at all stimulating, and generally acceptable to the stomach. American columbo, the root of *Frasera Walteri*, of the order *gentianaceæ*, and a false columbo from *coscinium fenestratum*, belonging to the same order with the genuine, have been sold in Europe instead of the genuine.

COLUMBRETES, or **Colombretes,** a group of small islands in the Mediterranean, belonging to Spain, about lat. 39° 54′ N., lon. 0° 44′ E., 29 m. S. E. of Cape Oropesa. They are of volcanic origin, and very picturesque, their broken masses seeming like the fragments of a larger island. There is deep water between them, and a deep and capacious harbor in the

largest island, Santa Maria de Columbretes. On this island there is a hill of some elevation called Monte Colibre. The surface is much broken, and exhibits lavas and scoria, but there is an exuberance of dwarf olives, geraniums, prickly pears, myrtles, and brushwood, and crops are raised of rye, maize, pulse, potatoes, and hemp. The island swarms with snakes, which seem to be harmless. This group is important as a military station.

COLUMBUS, a S. E. county of North Carolina, bordering on South Carolina, bounded S. E. by the Waccamaw river, and N. W. by Lumber river; area, 600 sq. m.; pop. in 1870, 8,474, of whom 2,948 were colored. The surface is level and partly marshy. The Wilmington, Columbia, and Augusta railroad traverses it. The chief productions in 1870 were 65,972 bushels of Indian corn, 79,307 of sweet potatoes, 119 bales of cotton, and 216,964 lbs. of rice. There were 368 horses, 1,960 milch cows, 3,550 other cattle, 5,383 sheep, and 12,759 swine; 3 saw mills and 1 saddle and harness factory. Capital, Whiteville.

COLUMBUS, a city of Georgia, capital of Muscogee co., on the left bank of the Chattahoochee river, 300 m. above Appalachicola bay, and 95 m. S. S. W. of Atlanta; pop. in 1870, 7,401, of whom 3,204 were colored. It enjoys superior advantages for trade and great facilities for the erection of mills and factories. The Chattahoochee is navigable from Columbus to the gulf of Mexico during eight months of the year; and from the end of October to the 1st of July its waters are traversed by numerous steamboats laden with cotton. Opposite Columbus the river rushes over huge, rugged rocks, forming rapids, valuable for the excellent water power which they furnish, and in the improvement of which large sums of money have been expended. A dam 500 ft. long has been constructed at this point. A handsome bridge connects the city with Girard village, Alabama. Columbus is regularly laid out, with streets from 99 to 165 ft. wide. The principal public buildings are the court house, Presbyterian church, temperance hall, bank of Columbus, and two hotels. Three flour and grist mills are in operation, consuming annually 100,000 bushels of wheat and 60,000 of Indian corn. There are two banks, with $150,000 capital, and eight public schools, with 14 teachers and 545 pupils. Two daily and two weekly newspapers are published. The Southwestern (Georgia), the Mobile and Girard, and the Western (Alabama) railroads meet here. Columbus was laid out in 1828.

COLUMBUS, a city and the capital of Lowndes co., Mississippi, on the left bank of the Tombigbee river, which is navigable at all seasons, 25 m. S. of Aberdeen, and 132 m. N. E. of Jackson; pop. in 1870, 4,812, of whom 2,738 were colored. It has regular steamboat communication with Mobile. A branch railroad extends to Artesia on the Mobile and Ohio railroad. It is situated in a fertile region, and is the shipping place of large quantities of cotton. One tri-weekly and four weekly newspapers and a monthly are published. It contains a handsome court house, a United States land office, several churches, and a bank with $300,000 capital.

COLUMBUS, a town of Hickman co., Kentucky, on the Mississippi, 18 m. below Cairo, Ill.; pop. in 1870, 1,574, of whom 761 were colored. It is situated on the S. slope of a high bluff commanding the river for about 5 m. There is some trade in lumber. A weekly newspaper is published. The Mobile and Ohio railroad connects here by ferry with the St. Louis and Iron Mountain line. Columbus was strongly fortified by the confederates, who occupied it Sept. 4, 1861. They regarded it as the northern key to the mouth of the Mississippi, and had in the town and its vicinity about 30,000 men. After the capture of Forts Henry and Donelson by the federal troops in February, 1862, Columbus was abandoned by the confederate forces, March 2.

COLUMBUS, a city and the capital of Ohio, seat of justice of Franklin co., built mostly on the E. bank of the Scioto, just below the mouth of the Olentangy, in the centre of the state, 100 m. N. E. of Cincinnati. It lies in lat. 39° 57′ N., lon. 83° 3′ W., on the great alluvial plain which stretches from the E. part of Ohio to the Mississippi river, and has therefore no great natural features of mountain, lake, or sea to make it remarkable. Its growth and wealth are largely due to the concentration of the state institutions and the liberal expenditure of public money, together with the natural advantage of a rich country. Its population has been as follows: in 1820, 1,400; 1830, 2,437; 1840, 6,487; 1850, 17,882; 1860, 18,554; 1870, 31,274, of whom 7,611 were foreign born, and 1,897 colored. The streets are very wide, and are regularly laid out in squares. Broad street is 120 ft. wide for more than two miles, and is beautifully shaded with maple and elm trees. Many of the handsomest residences are in this street. High street, the principal business thoroughfare, is 100 ft. wide. Capitol square, which is beautifully laid out and surrounded with elms, occupies the square of 10 acres between High and Third and Broad and State streets, in the centre of the city. In it an artesian well has been sunk to a great depth. Goodale park, presented to the city by Dr. Lincoln Goodale, is at the N. end of the city, and contains about 40 acres of native forest, which has been improved. City park, at the S. end of the city, is similar in all respects to Goodale park. The grounds of the Franklin co. agricultural society, 83 acres in extent, on the E. border, are the finest in the state. The gardens of the Columbus horticultural society occupy 10 acres, in the vicinity of the agricultural grounds. Of the five cemeteries the most beautiful is Green Lawn. The most interesting feature of Columbus to the stranger is its numerous and important public

buildings and institutions. In this it is not excelled by any city in the United States except Washington, and much surpasses any other town of the Ohio valley. The state has concentrated here nearly all the public buildings devoted to its business, benevolence, or justice. The most conspicuous among these are the capitol, the penitentiary, the lunatic asylum, the deaf and dumb asylum, and the blind asylum. These are all on a large and liberal scale. The capitol is one of the largest in the United States. It is 304 ft. long and 184 in width, and covers 55,936 square feet. The rotunda is 157 ft. high and 64 ft. in diameter. The building is in the Doric order, of fine gray limestone, approaching marble in its texture and appearance, and is perhaps as fine a specimen of architecture as can be found in this country. The interior is elegantly finished. The hall of the house of representatives is 84 ft. long by 72½ ft. wide. The senate chamber is 56 by 72½. There are rooms for all the state officers, besides 26 committee rooms. All the arrangements for heat, light, water, and grounds are planned with the utmost improvement which modern skill has been able to invent. The penitentiary is another striking building. It is of hewn limestone, and with its yards and shops covers six acres of ground on the E. bank of the Scioto. Its entire front is 456 ft., the centre being 56 ft., containing the warden's house and offices, with two wings, each 200 ft. front and three stories high. These wings each contain 350 cells for prisoners, arranged in five tiers, and isolated from the main wall of the building by open galleries. The central Ohio lunatic asylum was burned in 1868. In 1870 a new series of buildings was commenced on 300 acres of elevated ground W. of the city. These buildings will be in the Franco-Italian style, with a frontage of about 1,200 ft., depth 300 ft., centre tower 165 ft. high, and a capacity for 600 patients. The asylum for idiots, a plain Gothic structure, 272 by 198 ft., occupies grounds 123 acres in extent, adjoining those of the lunatic asylum. The new blind asylum in the E. part of the city, on the grounds of the old one, will be a stone structure, 340 by 270 ft., in the Gothic style of the Tudor period. The deaf and dumb asylum, centrally situated on large and handsome grounds in Town street, is built in the Franco-Italian style. There is a large and well built state arsenal. The United States arsenal, situated on extensive and handsome grounds, beautifully wooded, in the N. E. suburb of the city, comprises, besides an immense central structure, numerous other buildings, used for offices, quarters, storehouses, &c. The city hall, on the S. side of State street, is a Gothic building, 187½ by 80 ft., with a central tower 138 ft. high. The high school building is a fine specimen of the simple Norman or church style of architecture. The Holly water works occupy a building 132 by 98 ft., near the junction of the Scioto and Olentangy rivers, and are abundantly supplied with machinery. The county buildings are the court house and a poorhouse, or county infirmary. There are also a fine opera house and a new odd fellows' building.—Columbus has great advantages for internal commerce. It is situated on a branch of the Ohio canal, at the intersection of the following railroads: Cleveland, Columbus, Cincinnati, and Indianapolis; Central Ohio; Pittsburgh, Cincinnati, and St. Louis; Little Miami; Columbus and Xenia; Columbus, Chicago, and Indiana Central; Cleveland, Mt. Vernon, and Delaware; Columbus and Hocking Valley. The last named road, opened in 1870, penetrates a very rich iron and coal region, and has given a great impetus to the business interests of the city. There are several lines of street railroad. The manufactures are important, the principal establishments being 7 founderies, 7 breweries, 10 machine shops, 8 planing mills, 7 tanning and currying establishments, 2 manufactories of agricultural implements, 3 of boilers, 2 of brushes, 3 of cars and car wheels, 17 of carriages, 7 of chairs, 3 of edge tools, 2 of files, several of furniture, 8 of hair work, 3 of lard oil, 3 of lime, 1 of paper, 3 of ploughs, 4 of pumps, 14 of saddlery and harness, 2 of soap, 1 of tools, 1 of wire work, 6 flour mills, 6 book binderies and blank book manufactories, 2 blast furnaces, 1 manufactory of bolts and nuts, 4 of boots and shoes, 1 of rope, 1 of saws, 3 of silver plating, and 2 rolling mills. There are 24 hotels, 3 national banks, with an aggregate capital of $650,000, 2 state banks, and 5 insurance companies, of which one is a life insurance association.—The city is divided into 9 wards, and is governed by a mayor and a common council of 17 members. The fire department is under the control of a chief engineer. There are 3 steam engines, a hook and ladder company, and 11 fire alarm boxes. In 1870 the penitentiary contained 1,053 prisoners and 72 officers and employees; the lunatic asylum, 320 patients; idiot asylum, 232; blind asylum, 193 patients and 30 employees and officers; and the deaf and dumb asylum, 266 inmates and 15 instructors. There are also several hospitals and orphan asylums. A convent of the sisters of the Good Shepherd has been established at Franklin, in the neighborhood. The board of education consists of a president, secretary, and one member from each ward. In 1871 there were two high schools, with 19 teachers and 621 pupils; and seven evening schools, with 43 teachers and 1,241 pupils. The other schools (grammar and primary) had 102 teachers and 4,003 pupils. The total expenditure on account of schools for the year was $121,255 27, of which $53,158 35 were for sites and buildings, and $53,759 92 for teachers' wages. The Roman Catholics have four parish schools, with an average attendance of 1,020, and several academies and seminaries. Other educational institutions are Capitol university (Lutheran), and Starling medical col-

lege, which in 1871 had 10 professors and 42 students. The Ohio agricultural and mechanical college, endowed with the congressional land grant, was opened in September, 1873. The state library contains over 36,000 volumes. There are two musical societies, two daily newspapers, four tri-weekly (one German), five weekly, and four monthly periodicals (two German). One of the weeklies, "The Mute's Chronicle," is published by the institution for the deaf and dumb. The churches, 44 in number, are as follows: 4 Baptist (one for colored people), 4 Congregational, 1 Disciples, 3 Episcopal, 2 Evangelical Association, 1 Friends, 1 Independent Protestant, 1 Jewish, 4 Lutheran (1 German), 9 Methodist, 5 Presbyterian, 4 Roman Catholic, 4 United Brethren, and 1 Universalist.—Columbus was laid out in 1812; it was incorporated as a borough in 1816, and as a city in 1834. It became the seat of the state government in 1816, and was made the county seat in 1824.

COLUMBUS. I. Christopher, the discoverer of America, born in Genoa, Italy, died in Valladolid, Spain, May 20, 1506. The time of his birth is uncertain. The earliest date given (1430), derived from a statement of Ramusio, is irreconcilable with admitted facts, and must be set aside. Peschel has recently endeavored to show that he was born in 1456, the ultimate evidence for which is a letter of Columbus, dated in 1503, stating that he was then 48 years of age. This is so much at variance with admitted facts that it seems probable that there is an error in writing (48 for 58, or even 68). Between 1435 and 1449 there is hardly a year which has not been fixed upon by different authors. Bernaldez, whose intimate connection with Columbus gives special weight to his statement, says that he died "at the age of 70 years (*setenta años*), a little more or less." This would fix the date at 1435 or 1436, which has been generally accepted. But D'Avezac has recently argued that instead of 70 (*setenta*) years should be read 60 (*sesenta*), and presents plausible reasons for the alteration. This would give the date of his birth at 1445 or 1446. Either date, 1435–'36, or 1445–'6, is reconcilable with ascertained data. According to the custom of the time, he Latinized his name of Cristoforo Colombo into Columbus, and when he went to Spain adopted the Spanish form of it, Cristóbal Colon. He was the eldest son of Domenico Colombo, a wool comber, and Susanna Fontanarossa. They had two other sons, Bartolommeo and Giacomo (the latter called in Spain Diego), and a daughter. Columbus having early evinced a decided inclination for the sea, his education was mainly directed to fit him for maritime life. Besides the ordinary branches, he was instructed in Latin, and made some proficiency in drawing. For a short time he was sent to the university of Pavia, where he studied geometry, geography, astronomy, and navigation. He then returned to Genoa, and assisted his father in his trade of wool-combing. When about 14 years of age he began his nautical career with a distant relative of the same name, an admiral in the Genoese service. Little is known of Columbus during the many years he spent at sea. He is supposed to have served in the naval expedition fitted out in Genoa in 1459 by John of Anjou, duke of Calabria, to make a descent upon Naples in the hope of recovering that kingdom for his father, King René; but he appears to have been principally engaged in commercial voyages on the Mediterranean and up the Levant. About 1470 he went to Lisbon, where he supported himself by making maps and charts. He also sailed occasionally in the expeditions to the coast of Guinea. Soon after he had settled at Lisbon he married Doña Felipa, daughter of Bartolommeo Moñis de Perestrello, an Italian cavalier, lately deceased, who had been one of the most distinguished navigators under Prince Henry, and had colonized and governed the island of Porto Santo. Columbus now resided for some time on that island, where his wife had inherited some property, and where his son Diego was born. Here he studied the papers, charts, and journals which had been left by his father-in-law; and here he was brought into association with persons interested in maritime discovery, among whom was Pedro Correo, a navigator of note, who had married the sister of the wife of Columbus. Columbus determined upon sailing west, not to discover a new continent, but to reach India by a new route; and his confidence in the practicability of this project was greatly enhanced by the recent application of the astrolabe to navigation. His theory, according to his son Fernando, was founded upon the nature of things, the authority of learned writers, and the reports of navigators. He set down as a fundamental axiom that the earth was a terraqueous sphere or globe, the circumference of which from east to west at the equator he divided into 24 hours of 15 degrees each, making 360 degrees. Comparing the globe of Ptolemy with the earliest map of Marinus of Tyre, he concluded that 15 hours had been known to the ancients, extending from the Canary islands to the city of Thinæ in Asia; and that the Portuguese had advanced the western frontier one hour more, by the discovery of the Azores and the Cape Verd islands; leaving 8 hours, or one third of the circumference of the earth, unknown and unexplored. This space might in a great measure be occupied by the eastern regions of Asia; and by pursuing a direct course from east to west through the intervening ocean, a navigator would arrive at the extremity of that country. This supposition was corroborated by the narratives of Marco Polo and John Mandeville, who in the 13th and 14th centuries had visited the remote parts of Asia, far beyond the regions laid down by Ptolemy; and also by the opinion of Strabo, who believed that the earth was surrounded by the

ocean which washed India on the east and Spain and Mauritania on the west. Moreover, various indications of land in the west had been found. A Portuguese pilot had taken from the water, 450 leagues west of Portugal, a piece of curiously carved wood, while a similar piece which had drifted from the same quarter was seen on the island of Porto Santo. Canes of tropical growth had been washed on the Madeiras, huge pine trees on the Azores, and even two drowned men, of appearance unlike Europeans, had been found on the island of Flores—all from the west. The precise time when Columbus first conceived the design of seeking a western route to India cannot be determined; but in the summer of 1474 he opened a correspondence upon this subject with Paulo Toscanelli, a learned cosmographer of Florence, who had already, in a letter to Alfonso V. of Portugal, expressed his views on a western passage to India. In reply to Columbus he said: "I praise your desire to navigate toward the west; the expedition you wish to undertake is not easy, but the route from the west coasts of Europe to the spice Indies is certain, if the tracks I have marked be followed." He also sent him a map projected partly according to Ptolemy and partly according to the descriptions of Marco Polo. On this map Asia was laid down in front of the western coasts of Africa and Europe, with a moderate space of ocean between them, in which were placed Cipango (supposed to be Japan), Antilla, and other islands. This map, by which Columbus sailed upon his first voyage of discovery, has been lost. In 1477 he made a voyage, apparently of exploration, to the northwest, 100 leagues beyond "the island of Thule," supposed to have been Iceland, into lat. 73°, where he was astonished to find the sea not frozen. Next he is reported to have visited the Portuguese settlement of San Jorge da Mina, on the coast of Guinea. It is asserted that Columbus first applied for aid in his undertaking to his native country, Genoa, but without success; and he is supposed to have vainly solicited the patronage of Portugal before the death of Alfonso. But the first application for royal patronage of which there is any clear and indisputable record was made to John II., who ascended the throne of Portugal in 1481. This monarch had imbibed the passion for discovery from his grand-uncle Prince Henry, and with his reign all its activity revived. King John seems to have received the proposition with favor, and referred it to a learned body charged with all matters relating to maritime discovery, and subsequently to a council composed of prelates and persons of the greatest learning in the kingdom, both of which treated the project as extravagant and visionary. Meantime he sent a caravel with the ostensible design of carrying provisions to the Cape Verd islands, but with secret instructions to pursue the route indicated by Columbus. After cruising for several days the caravel returned with the report that no indications of land had been seen. The king was not yet inclined to abandon the project, but Columbus, who had lost his wife and was now reduced to poverty, determined to abandon Portugal and seek elsewhere for patronage. Accordingly, with his son Diego, he left Lisbon for Spain toward the end of 1484, secretly, lest his departure should be prevented by King John, or, as some have asserted, by his creditors. He had already engaged his brother Bartolommeo to apply for aid to the king of England, though he does not appear to have entertained great hope from that quarter. It is said that Columbus after leaving Portugal made proposals to the government of Genoa for the second time, and also to Venice, which were declined. In 1485 he was in the south of Spain, where he endeavored to interest the dukes of Medina Sidonia and Medina Celi. The latter recommended the project to Queen Isabella, who requested that Columbus might be sent to her. Having arrived at Cordova, and while waiting for an opportunity to appear at court, Columbus became attached to Doña Beatriz Enriquez, by whom he had a son, Fernando, born in 1487, who became the historian of his father. Columbus followed the court to Salamanca, where he was introduced to the king by Pedro Gonzalez de Mendoza, grand cardinal of Spain, the most important personage about the court. Ferdinand heard him without disfavor, and referred the matter to a council of learned men, mostly ecclesiastics, under the presidency of the confessor of the queen. The conference assembled in the Dominican convent of San Estevan at Salamanca, but, instead of investigating the project on scientific grounds, controverted it by Scriptural texts; and it was not till 1491, after many renewed applications, that the commission reported "the project in question vain and impossible, and not becoming great princes to engage in on such slender grounds as had been adduced." Columbus, however, appears, during the seven years he attended the court, to have experienced personally the favor of the king and queen, and to have had frequent communication with them, although the king at least could not be brought to believe in his wonderful projects. The Spanish sovereigns were during this period engaged in the war against the Moors of Granada, and Columbus seems to have borne arms as a volunteer. A passage in Diego Ortiz's "Annals of Seville" incidentally mentions his bravery. Records are also extant of his having been provided with free quarters at the king's charge, with pay equal to his personal expenses. During this period of hope deferred, Columbus sustained himself with undiminished confidence. Endued with a poetic temperament, the auguries he sought for in the mystic language of the Scriptures gave a bias to his mind, which in his later years amounted almost to delusion. He sought in prophecy for assurance that the time had come when Christianity should be

extended to the ends of the earth, and came to regard himself as the destined instrument of Heaven for that end. While in this frame, and assisting at the siege of Baza, in December, 1489, two pilgrims having brought to the camp the threat of the sultan of Egypt to raze the tomb of Christ, Columbus registered a vow to devote the proceeds of his discoveries to rescue the holy sepulchre. In 1488 he received a letter from John II. of Portugal, inviting him to return. Henry VII. of England also invited him by letter to that country, and held out promises of encouragement. In 1491 he set out to lay his project before Charles VIII. of France, who had also written to him. On his way he stopped at the gate of the Franciscan monastery of La Rabida, near the seaport of Palos de Moguer in Andalusia, and asked for some bread and water for his boy. The prior of the convent, Juan Perez de Marchena, became greatly interested by the conversation of Columbus, and detained him as his guest. The mariners of Palos were then the most enterprising of Spain, and Juan Perez, himself a learned man, took much interest in their adventures. Dazzled by the stupendous projects described to him, but distrusting his own judgment, the worthy prior consulted with his friend Garcia Fernandez, physician of the village, and also with Alonso Pinzon, an experienced navigator of Palos. Pinzon was enthusiastic, and offered not only to advance money, but to command a ship. Perez had been the queen's confessor, and presuming on this sacred relation, he wrote a letter to Isabella, which he sent by the hands of Sebastian Rodriguez, an influential navigator of Palos, beseeching her to grant him an interview. Receiving a favorable reply, the prior mounted his mule at midnight, and rode to the camp at Santa Fé, where the king and queen were, and procured for Columbus an opportunity to explain his views personally. Isabella, on appointing an interview, considerately sent Columbus 20,000 maravedis (about $216), to put himself in condition to appear at court. Columbus related his story before the king and queen; but the terms upon which he insisted were characterized as exorbitant and ridiculous by the queen's confessor, Fernando de Talavera, archbishop of Granada, who had been appointed one of the negotiators; they were accordingly rejected. Columbus had left the royal presence, and was already two leagues from Granada on his way to Cordova, whence he intended to depart for France, when a messenger from the queen summoned him to return to Santa Fé. The brief space of time that had intervened gave to Spain the empire of the new world. When Columbus left the queen's presence, Juan Perez, Alonso de Quintanilla, Luis de San Angel, receiver of ecclesiastical revenues of Aragon, and the lady Beatriz, marchioness of Moya, remonstrated. Ferdinand coldly signified that the exchequer was empty. Isabella exclaimed, "I undertake the enterprise for my own crown of Castile, and will pledge my jewels to raise the necessary funds." The necessity of raising money by this means was obviated by San Angel offering to advance the funds on behalf of the crown of Castile, and 17,000 florins were advanced out of the treasury of Ferdinand. Accordingly, Columbus on his return had but to join their majesties in signing the agreement, on his own terms, as drawn up by Juan de Colonna, the royal secretary. This document, signed at Santa Fé, April 17, 1492, contained five articles: 1, that Columbus and his heirs male for ever should have the office of admiral over all lands he might discover, with honors equal to those of the grand admiral of Castile in his jurisdiction; 2, that he should be viceroy and governor general, with right to name governors for the sovereigns' approval; 3, that he should receive one tenth of the net value of all pearls, precious stones, gold, silver, spices, and merchandise obtained within his jurisdiction; 4, that he and his lieutenants should be the sole judges in all disputes that might arise between his jurisdiction and Spain; and 5, that he might at any time advance one eighth in any venture, and receive a corresponding share of the profits. A letter of privilege also permitted Columbus to take the title of don. The royal documents were signed both by Ferdinand and Isabella, but her separate crown of Castile defrayed all the expense; and during her life few persons except Castilians were permitted to establish themselves in the new territories. On May 8 young Diego was appointed page to Prince John, the heir apparent, and on May 12 Columbus took leave of the king and queen to superintend the fitting out of the expedition at Palos. He, with the aid of Perez and the brothers Pinzon, contributed an eighth of the expense. Trouble was found in procuring crews. Some were induced to join by four months' pay in advance, and by a decree that volunteers should be free from arrest for two months after their return. The complement was made up by impressment. Three ships, the Santa Maria, a decked vessel, and two caravels, or undecked boats, the Pinta and Niña, were fitted out. The Santa Maria was of 90 ft. keel and had four masts, of which two were square-rigged, and two fitted with lateen sails. It was decked from stem to stern, having besides a poop 26 ft. in length, beneath which was the armament of heavy guns, with small pieces forward, for throwing stones and grape. It was provided with eight anchors and carried 66 seamen. The other two vessels were of small size, which was considered an advantage for exploring rivers and coasts. Columbus commanded the Santa Maria; Martin Alonso Pinzon, having his second brother, Francisco Martin, for pilot, the Pinta; and the third brother, Vicente Yañez Pinzon, the Niña. Three other pilots were attached to the expedition, namely: Sancho Ruiz, Pedro Alonso Niño, and Bartolomé Roldan. Rodriguez San-

chez was inspector general of the fleet; Diego de Arana, principal alguazil; Rodrigo de Escobar, royal notary. There were also a surgeon, a physician, some few adventurers, and 90 seamen; in all, 120 souls. There were provisions for one year. Before leaving, Columbus, with most of his officers and crew, confessed to Juan Perez, and received the sacrament; and from the roads of Saltez, near Palos, on Friday morning, Aug. 3, 1492, they set sail on their expedition. They reached the Canaries without incident, except an accident to the Pinta's rudder, but hastened their departure from those islands, Sept. 6, on learning that a Portuguese fleet of three frigates was near, which the admiral was apprehensive might have been sent to intercept him. When night fell, and they lost sight of the last land on the margin of the sea of darkness, the full measure of their hardihood burst on the adventurers. Many wept, and declared they should never return. Columbus calmed their fears, and excited their cupidity by picturing the gorgeous regions of the east, drawing for descriptions on his imagination of Cathay. After leaving the Canaries the winds were light and baffling, but always from the east. On Sept. 11 they saw floating a tree, or mast, as of a vessel of 120 tons. On the afternoon of the 13th Columbus was startled to find a variance of the needle, which no longer pointed to the pole. The crew becoming alarmed, he invented a plausible theory about the attraction of the polar star, which quieted the pilots' fears. He also took observations of the sun every day with an astrolabe, and kept two logs, one correct for himself, and the other, showing a smaller progress, for his crew, thus keeping them in ignorance of the great distance they were from Spain. As they advanced, the oldest sailors were deceived by frequent indications of land. On the night of the 15th a meteor fell within five lengths of the admiral's ship. On the 16th the ships entered into the region of the trade winds. "This day, and all the following," says Columbus, "the air was so mild that it wanted but the song of nightingales to make it like the month of April in Andalusia." The same day they came into the sea of seaweed, yet known as the Sargasso sea; and on the 18th Martin Alonso, who had been ahead in the Pinta, assured Columbus that, from indications, they would see the land next day. The 19th was calm; they sounded, and found no bottom at 200 fathoms. On the 20th a change of wind to the S. W. cheered the crews with the belief that they were not urged forward by an ever-blowing east wind, against which it would be impossible to return. On the 23d was a storm, during which the crews insisted that the admiral should tempt Providence no further. On the 25th the wind became favorable. Columbus was studying a chart in his cabin, when Martin Pinzon cried "Land!" pointing to the S. W., where a dark mass was visible at the apparent distance of 25 leagues. The *Gloria in excelsis* was sung in all the ships, and the course was altered, only to find on the morrow that they had mistaken a cloud for the shore. For several days they sailed due west with a favoring breeze. On Oct. 1 Columbus estimated that he was 707 leagues from the Azores, and that in 40 more he would make some part of Asia. On the 7th the Niña gave the signal for land; but this was again an illusion. The crews had long been in a state of mutiny, often despairing, at other times turbulent, and even plotting to throw the admiral overboard. Columbus never swerved. Impressed by the one great idea of Asia to the westward, he refused to turn from the course, not even in search of islands which the pilots imagined to be near. During the 8th, 9th, and 10th they sailed W. S. W., following the flight of birds. On the 11th the Pinta picked up a piece of wood rudely carved, and the Niña a branch of thorn, with red berries. As night set in, the course was again changed due west. After evening prayer the admiral ordered a double watch to be set, and promised a silken doublet, in addition to the 10,000 maravedis guaranteed by the crown, to him who should first see the land. At 10 o'clock P. M. Columbus was seated on his deck, gazing wistfully seaward, when he saw a light. He called to Pedro Gutierrez, who also saw it, but Rodriguez Sanchez did not. No one slept that night. At 2 o'clock A. M. of Friday, Oct. 12, 1492, after having been 71 days at sea, the Pinta fired a gun, the signal for land. Rodrigo Triana, a sailor of the Pinta, was the first who saw the new world; but the reward was afterward adjudged to Columbus, for having previously perceived the light. When morning dawned a wooded island was seen about two leagues distant, with crowds of natives running along the beach. At sunrise, the boats being lowered, Columbus with the royal standard of Castile, and the brothers Pinzon bearing each a flag with a green cross, were rowed to the shore. Columbus first stepped on the beach. All knelt down, kissing the ground with tears and thanks to God. Then rising and drawing his sword, Columbus, as grand admiral and viceroy, unfurled the royal banner, took possession in the name of the crown of Castile, and named the island (one of the Bahama group) San Salvador. The astonished natives gazed in silence at their visitors, whom they imagined to be gods come down from heaven. Presents were exchanged of toys and trinkets for cotton yarn and cassava bread. Some of the natives, who wore ornaments of gold, on being interrogated whence the metal came, indicated by gestures a country in the south, whereon Columbus carried off seven of them and set out in search of this auriferous region, which he supposed to be Cipango. In the search, which proved fruitless as far as gold was concerned, he discovered the islands of Conception, Exuma, Isla Larga, and Cuba. The last he at first thought was the Cipango he

sought, but afterward concluded it was the mainland of India. He also discovered Hayti, which he thought was the Ophir of Solomon, but which he called Hispaniola, or Little Spain. On the bay, since called bay of Caracola, of this island, he built a fort with the timbers of the Santa Maria, and leaving in it 39 men, sailed on Jan 4, 1493, for Spain, taking with him several natives in the Niña, Martin Pinzon having already gone in search of gold on his own account in the Pinta. During the voyage a storm threatened the Niña with destruction. Columbus, fearful lest the knowledge of his discovery should perish, prepared a written statement of it, and heading it up in a cask committed it to the deep. On March 15, 1493, the ship reached the port of Palos, having a few days before been driven by storm into the Tagus, where he was favorably entertained by King John. The Spanish sovereigns, then at Barcelona, received him with great relaxation of court etiquette, ordered him to relate his adventures seated in their presence, confirmed all the dignities previously bestowed, and placed him in command of a fleet of 17 ships and 1,500 men, to prosecute the discovery. With this fleet he sailed from Cadiz, Sept. 25, 1493. From this day his good fortune forsook him. Many of those who sailed with him were adventurers in search of gold. Mutinies and quarrels broke out, and many of those who expected to find fortunes, but met nothing but disappointment, threw the blame on the admiral. Having discovered the Windward islands, Jamaica, and Porto Rico, and founded a colony in Hispaniola, of which he left his brother Bartolommeo *adelantado*, or lieutenant governor, he returned home against the trade winds, and reached Cadiz June 11, 1496. He was successful in clearing himself of the clamor against him. On some courtiers depreciating the value of his discovery, he invited them to make an egg stand on end. When they had exhausted their efforts to accomplish the feat, Columbus struck the egg on the table, breaking the shell, and thus left it upright. "Any one can do that!" cried the courtiers. "When I have shown you the way," replied Columbus, leaving them to make the application. Columbus sailed on his third voyage to the new world, May 30, 1498, from San Lucar de Barrameda, with six ships. On this occasion he kept further to the south, discovering the mouth of the Orinoco, which he imagined was the great river Gihon, having its rise in the garden of Eden; also the coast of Pará, and the islands of Trinidad, Margarita, and Cubaqua; then he bore away to Hispaniola, there to recruit his enfeebled health. He found the colony disorganized, and in his efforts to restore it became again the victim of malice and misrepresentation. A commissioner, Francisco de Bobadilla, was sent from Spain ostensibly to inquire into the difficulties. His first act was to put Columbus and his brother in chains, and send them to Spain. The account given of this indignity is touching. "Are you taking me to death, Vallejo?" inquired Columbus sadly, when that officer came to lead him from his cell. "Your excellency is to be conducted to Spain," replied the officer, whereupon the admiral relapsed into silence. The officers of the ship offering to liberate him from his fetters, he replied proudly that the chains had been put upon him by authority of their majesties, and he added, "I will wear them until they shall order them to be taken off, and I will preserve them afterward as relics and memorials of the reward of my services." The indignation expressed throughout Spain at this outrage caused the king to disclaim having authorized it; but it is evident that the nobles were jealous of the superior rank of the admiral, and the king dissatisfied with the unproductiveness of the new countries. After nine months' polite evasion of his entreaties for redress, Ferdinand appointed Nicolas Ovando governor of Hispaniola in his stead. Bobadilla had meantime been recalled, and was drowned on the way. The only subsequent employment of Columbus, now old, was the command of four caravels with 150 men, to search for a passage through the sea now known as the gulf of Mexico to the East Indies. He sailed from Cadiz, May 9, 1502; was refused permission to refit at his own colony, Hispaniola; coasted the south side of the gulf of Mexico; and after much suffering from famine and hardship returned home, reaching San Lucar Nov. 7, 1504. He lay sick some months at Seville, and recovered only to have his claims for redress finally rejected by the king, Queen Isabella being now dead. An old man, broken in body, although in full possession of his mental faculties, having, in his own words, "no place to repair to except an inn, and often with nothing to pay for his sustenance," the discoverer of the new world died, in the act of repeating the words, in Latin: "Lord, into thy hands I commit my spirit." Seven years afterward a marble tomb was placed over his remains, with an inscription ordered by the king:

Á Castilla y á Leon
Nuevo mundo dió Colon.

("To Castile and Leon a new world gave Colon.") Death did not end his voyages. His remains, first deposited in the convent of St. Francis, were transferred in 1513 to the Carthusian monastery of Las Cuevas; were taken in 1536 to Santo Domingo, and deposited in the cathedral of that city; thence were conveyed with great pomp in 1796 to the cathedral of Havana, where they now repose.—The character of Columbus is impressed on his life: lofty, daring, and ambitious in design, indomitable in conduct, moderate in success, undepressed in adversity, and in all imbued with a spirit of devotion. In person he was above the middle height, his countenance oval, with aquiline nose, bluish gray eyes, and fresh complexion. His hair had been auburn in youth,

but whitened early. The nobleness of his bearing commanded respect. He spoke fluently, and his conversation was vivacious, although at a later period, when he had been tried by misfortune, he says his "speech was abrupt and little amiable." In personal habits he was temperate, and toward his family entertained the warmest affection. His sons were more fortunate than himself. Diego sued the king in the high council of the Indies, and, recovering the viceroyalty of Hispaniola, married Maria de Toledo, niece of the duke of Alva. Their eldest son, Luis, exchanged the hereditary dignity of admiral for a pension and the title of duke of Veragua, marquis of Jamaica. Luis's eldest daughter married her cousin Diego, and died without issue, the male line thus becoming extinct. Finally the property and titles became in 1608 merged by marriage through the female line in a branch of the house of Bragança.—See Fernando Colon, *Historia del Almirante Cristoforo Colombo, suo padre* (Italian translation from the Spanish MS., Venice, 1571); *Navigatio Christophori Columbi* (Vicenza, 1507); *Codice diplomatico Colombo-Americano* (Genoa, 1523); Oviedo, *Historia general de las Indias* (1535–'7); Herrera, *Indias Occidentales* (1601); Robertson's "History of America" (1777); Bossi, *Vita di Colombo* (Milan, 1818); Navarrete, *Relacion de los quatro viajes de Cristóbal Colon* (1825); Washington Irving, "Life and Voyages of Columbus" (New York, 1828); Prescott, "Ferdinand and Isabella" (Boston, 1838); Schneidawind, *Christoph Columbus, Americas Entdecker* (1843); A. Sanguinetti, *Vita di C. Colombo* (1846); Roselly de Lorgues, *Christophe Colombe, sa vie et ses voyages* (Paris, 1856); *Patria e biografia di Cristoforo Colombo* (Genoa, 1858); Peschel, *Ueber das Geburtsjahr des Entdeckers von Amerika* (in *Das Ausland*, 1866); H. Harrisse, *Bibliotheca Americana Vetustissima* (New York, 1866); D'Avezac, *Année véritable de la naissance de Christophe Colombe* (in the *Bulletin de la société de géographie*, July, 1872). The complete works (*Raccolta completa*) of Columbus were published by Torre in 1864 (Lyons). **II. Bartolommeo,** elder brother of the preceding, born in Genoa about 1432, died in 1514. In 1470 he was established as a mariner and constructor of maps at Lisbon, whither many adventurous navigators had been drawn by royal patronage. He is believed to have visited the Cape of Good Hope with Bartholomew Diaz. It is not known how long he was absent when his brother sent him to England to seek the aid of Henry VII., but it appears certain that Christopher was ignorant of his fate, further than that he was captured by pirates. He did, however, attain the ear of the English monarch, and presented him with a map of the world, but it does not appear that he succeeded in procuring English aid. On his return through France he learned that his brother had already discovered the new world, and had sailed on a second voyage. Hastening to the Spanish court, he was received as became the brother of the admiral. Queen Isabella sent him in command of three store ships to the new colony of Hispaniola, where Christopher received him with joy, and appointed him *adelantado* or lieutenant governor of the Indies. In this position Bartolommeo showed great bravery and decision. He shared his brother's imprisonment, and with him was liberated on reaching Spain, where the Spanish monarchs confirmed his title, and gave him the lordship of the small island of Mona near Santo Domingo, with 200 Indians as his personal body guard. The fierce energy of his character, however, made them jealous of giving him too much latitude in affairs. He died childless.

COLUMELLA, Lucius Junius Moderatus, a Roman writer on rural affairs, flourished about A. D. 40. He was a native of Gades (Cadiz), but resided chiefly at Rome. His treatise *De Re Rustica* is one of the most valuable works on agriculture which have come down to us from antiquity. It is divided into 12 books, of which the 10th is in verse. The earlier editions of this work contain also his treatise *De Arboribus*, in one book. According to Pliny, Columella wrote a work on ancient sacrifices for obtaining the fruits of the earth, but this is lost. The *editio princeps*, printed in folio by Jenson at Venice, in 1472, and forming part of a collection of *Rei Rusticæ Scriptores varii*, is very rare. The most complete edition is contained in the *Scriptores Rei Rusticæ* of Schneider (4 vols. 8vo., Leipsic, 1794).

COLUSA, a N. county of California, bounded E. by the Sacramento river and W. by the Coast range of mountains; area, 2,376 sq. m.; pop. in 1870, 6,165, of whom 271 were Chinese. Several streams rise in the Coast range, but sink before reaching the Sacramento; Stony and Sycamore creeks traverse the county. Quicksilver, sulphur, and salt are found. The soil is fertile. The chief productions in 1870 were 701,174 bushels of wheat, 386,468 of barley, 11,214 tons of hay, and 1,086,599 lbs. of wool. There were 5,905 horses, and 231,537 cattle, sheep, and swine. Capital, Colusa.

COLVIN, Sydney. See supplement.

COLWELL, Stephen, an American merchant and author, born in Brooke co., W. Virginia, March 25, 1800, died in Philadelphia, Jan. 15, 1871. He was educated at Jefferson college, where he graduated in 1819; was admitted to the bar in 1821, and practised his profession for seven years in St. Clairsville, Ohio, and from 1828 to 1836 in Pittsburgh. He afterward became an iron merchant in Philadelphia, and a manufacturer of iron, first at Weymouth, N. J., and afterward at Conshohocken on the Schuylkill. He was an active member and officer of many philanthropic societies, a director of several railroads, a trustee of the Presbyterian general assembly, and a commissioner under an act of congress in 1865 "to inquire and report upon the subject of raising

by taxation such revenue as may be necessary to supply the wants of the government." He had long before made himself known as an original thinker and an able writer on political economy and other subjects. His principal writings, besides articles in reviews and magazines and reports from the revenue commission, are: "Letter on the Removal of the Deposits from the United States Bank" (1834); "New Themes for the Protestant Clergy" (1851); "Politics for American Christians" (1852); "Hints to a Layman" (1853); "The Ways and Means of Payment" (1859); "The Five Cotton States and New York" (1861); "Southern Wealth and Northern Profits" (1861); "The Claims of Labor and their Precedence to the Claims of Free Trade" (1861); "Gold, Banks, and Taxation" (1864); "Financial Suggestions and Remarks" (1867).—See "A Memoir of Stephen Colwell," by Henry C. Carey (Philadelphia, 1872).

COLZA OIL. See RAPE, a plant.

COMA (Gr. κῶμα, lethargy), a condition resembling profound sleep, in which the activity of the sensory ganglia is more or less completely suspended. The sensorium consists of the ganglionic masses lying along the basis of the skull in man, and partly included in the medulla oblongata, described in the article BRAIN, as the tubercula quadrigemina, olfactory lobes, corpora striata, and optic thalami, in which the nerves of special sense and of common sensation have their central terminations. In complete coma the activity of these ganglia is suspended, so that the individual is neither conscious of impressions derived from the organs of sense, nor has any perception of self-existence from the recognition of cerebral changes; shut off from the external world, and from internal sensation, his existence is to all intents and purposes a nonentity, a state of psychical annihilation. In the simpler forms of coma there is only a suspension, not a perversion, of the cerebral functions; but in the graver cases the accompanying delirium shows an affection of the hemispheres. Coma may be produced by congestion or hæmorrhage in the brain, by any abnormal pressure on this organ, by the agency of narcotic poisons and alcohol, by exhaustion from loss of blood, by concussion of the brain, and by action on the blood of various morbid products generated within the system. Slight coma differs but little from profound sleep; the heavy sleep of the drunkard, or that after severe and long mental or physical exertion, is almost comatose, the person being quite insensible to ordinary external stimuli; this condition cannot be regarded as disease, but as the rest required for the regeneration of the body by the slow and unobstructed performance of the nutritive processes; so in the coma from concussion or deficient supply of blood to the brain, the person cannot be aroused from his deep sleep without danger of violent and perhaps fatal reaction. Medical writers describe two varieties or stages of coma: *coma vigil*, in which the patient opens his eyes when spoken to, instantly shutting them again, with delirium, muttering, and agitation, as in unnatural wakefulness; and *coma somnolentum*, in which, after momentary revival, the patient sinks immediately into an apparently profound sleep; they are simply two different degrees of the same affection.

COMACCHIO, a fortified town of Italy, in the province and 28 m. S. E. of the city of Ferrara, 3 m. from the Adriatic; pop. about 6,500. It is the seat of a bishop. The chief occupation of the inhabitants is pisciculture. A series of canals has been constructed to connect the lagoon in the midst of which the town is situated with the Adriatic, so as to admit the fry of the eel, the mullet, the sole, and other fishes into the lagoon, where they are fattened. The annual product now averages 1,000,000 lbs. The manufacture of salt is also of importance, about 2,000,000 lbs. being obtained annually.

COMAL, a S. W. central county of Texas, bounded S. W. by the Cibolo river, and intersected by the Guadalupe; area, 575 sq. m.; pop. in 1870, 5,283, of whom 377 were colored. The surface is rolling, and in some parts mountainous; live oak and mezquite cover about one third of the land. The soil is fertile in the valleys, but fit only for grazing elsewhere. The county was settled by Germans. The chief productions in 1870 were 169,250 bushels of Indian corn, 3,972 of rye, 8,913 of sweet potatoes, 1,309 tons of hay, 69,305 lbs. of butter, and 1,303 bales of cotton. There were 3,993 horses, 5,978 milch cows, 15,413 other cattle, 1,783 sheep, and 2,671 swine; 1 cotton and woollen mill, 3 flour mills, 1 saw mill, 5 tanneries, and 15 manufactories of saddles and harness. Capital, New Braunfels.

COMANA. I. An ancient city of Cappadocia (supposed to be the modern Bostan), on the river Sarus, celebrated in antiquity for its temple of Ma (the moon-goddess), or according to others of Enyo (Bellona), and for the great devotion of its inhabitants to the worship of that goddess. Over 6,000 persons were engaged in the service of the temple. The city was governed by the high priest, who was always a member of the reigning family, and took rank next to the king, if he did not exercise royal functions himself. **II.** A city of Pontus, on the river Iris, devoted to the same goddess as the Cappadocian Comana, of which it was believed to be a colony. On its site is now Gümenek, about 7 m. N. E. of Tokat, and about 70 m. S. S. E. of Samsun on the Black sea.

COMANCHE. I. A N. W. central county of Texas, intersected by Leon river; area, 1,050 sq. m.; pop. in 1870, 1,001, of whom 24 were colored. A mountain ridge forms its S. W. boundary; the rest of the surface is generally undulating and well timbered, about a third part being covered with oak, ash, elm, &c. The soil is fertile in the river bottoms, but unproductive in other places. Stock raising is the leading occupation. The native mustang grape

is abundant. The chief productions in 1870 were 3,368 bushels of wheat, 39,292 of Indian corn, 1,722 of sweet potatoes, and 28 bales of cotton. There were 275 horses, 17,246 cattle, and 5,337 swine. Capital, Comanche. **II.** A S. W. county of Kansas, bordering on the Indian territory; area, 780 sq. m.; yet unsettled. It is intersected by the Nescatunga and Cimarron rivers.

COMANCHES, a tribe of American Indians belonging to the great Shoshone family. They are a roving race, living in skin lodges with no fixed villages, roaming when first known from the head waters of the Brazos and Colorado to those of the Arkansas and Missouri, and in some bands penetrating to Durango in Mexico and to Santa Fé in New Mexico. They are great hunters and warriors, and have been at war with the Spaniards, and with the Osages, Pawnees, and other tribes of the plains, from



A Comanche Warrior.

an early period. Their traditions are vague, but they claim to have come from the west. They believe in a supreme being called Niatpo (my father), and have medicine men called *puhacan*. They call themselves Naiini ("live people"); but the Kansas called them Padoucas, the name adopted by the French, and the Spaniards Comanches, a term adopted in the United States. They are divided into eight bands. The Comanches have a martial air, and, though rather heavy and ungraceful on foot, are splendid on horseback. They procured horses from the Spaniards at an early day by theft, accident, or purchase, and becoming expert riders acquired additional power. —The French under Dutisné first reached their country in 1719, and began to buy horses from them. In 1724 an expedition under De Bourgmont visited their principal bands and made a treaty with them. They were then scattered over a tract of 200 leagues, those near the Spaniards in villages more or less fixed, those remote moving as game required. One village visited by De Bourgmont contained 140 lodges, 800 warriors, 1,500 women, and 2,000 children. Both sexes were then and have always been more decently dressed than Indians generally, the men wearing a regular pantaloon and good moccasins, those of the women extending up till they reached the tunic. They had long and bloody wars with the Spaniards till Anza in 1783, in a vigorous campaign, defeated and killed 30 chiefs, among them the great war chief Tabivonaritgante, called by the Spaniards Cuernoverde. This established peace for some time, and a chief named Maya sent his son to Mexico, who after receiving a little education returned to succeed his father, and thus kept up the good feeling. Morfi, the historian of Texas, about 1780 estimated them at 5,000 warriors. In 1816 they lost 4,000 by smallpox, and in 1822 were estimated at about 9,000 in all; but Catlin some years later put their numbers much higher. President Burnet in 1847 estimated them at 10,000 or 12,000, 2,000 or 2,500 being warriors. They have always been dangerous and troublesome. They were at one time on a reservation in Texas, but were expelled and have since been unrelenting enemies of that state. The United States government has collected some of them on a new reservation in the western part of the Indian territory. One part, the Quauhada, or Staked Plain Comanches, ridicule the idea of settling down, but were chastised by Col. McKenzie at McClellan's creek in 1872. The Comanches were estimated in 1872 at 3,218, the roving bands numbering perhaps 1,000 more. Their individual property was estimated at $400,000. They have consequently lost greatly, their numbers not being recruited as formerly by young Mexican captives of both sexes.

COMAYAGUA. I. A department of Honduras, Central America; area, 4,800 sq. m.; pop. about 75,000. It occupies the S. central portion of the state, and consists chiefly of the plains of Comayagua and of Espino, both watered by the Humuya river. In the S. E. part are the mountains of San Juan or Guajiquero, occupied exclusively by Indians descended from the aboriginal Lencas, who cultivate the cereals and the fruits of the higher latitudes, and raise a fine and hardy race of mules. The soil is rich, and the plains are well adapted for the production of cochineal, coffee, and the other staples of semi-tropical regions. Like the rest of Honduras, it possesses great mineral wealth, which however is neglected from want of enterprise and capital. Rich silver mines exist in the mountains, and copper ores abound. There are also vast deposits of blue and veined marble and inexhaustible beds of ochre of various colors and fine quality. Pine and oak abound on the hills, and mahogany, cedar, lignumvitæ, and other useful woods are found in the valleys.

The district is famed for its superior breed of cattle. Among the principal towns are Las Piedras or Villa de la Paz, Villa de San Antonio, Opoteca, Espino, San Antonio del Norte, Goascoran, and Caridad. **II.** The capital of the department and of the state of Honduras, situated on the S. border of the plain of Comayagua, in lat. 14° 28′ N., lon. 87° 39′ W., on the Humuya river; pop. about 12,000. It is very nearly midway between the two oceans. Previous to 1827 it was a flourishing town, embellished with fountains and monuments, and having many fine buildings; but in that year it was taken and burned by the monarchical faction of Guatemala, and it has never since recovered. It is the seat of a bishopric, and has a large cathedral, a university, a hospital, and several churches and convents. Its trade is small on account of the difficulty of communication with the coast; but as it is on the route



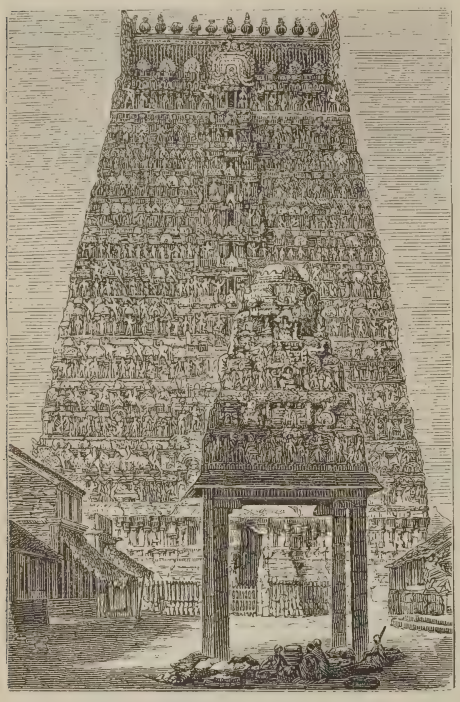
Comayagua.

of the interoceanic railway now building from Puerto Cavallos to the bay of Fonseca, it will probably increase in importance. Comayagua was founded in 1540 by Alonso Cáceres, and originally called Valladolid. The country around it has many remarkable ruins, and bears evidences of having sustained in ancient times a large and flourishing population.

COMB (Sax. *camb*), an instrument of wood, horn, shell, ivory, or other material, cut on one or both sides into a series of teeth, serving to disentangle and adjust the hair, and often worn by women as an ornament to the head, or to retain the hair in place. Its invention belongs to the remotest antiquity. The combs of the ancient Egyptians were usually of wood, having on one side large, and on the other fine teeth, the central portion being sometimes inlaid or ornamented with carved work. When having but a single row of teeth, the opposite side was often surmounted by a figure of the ibex or some other animal. They were about four inches long and six deep, the teeth on either side being over two inches in length. The Greeks, who dressed their hair with great care, used combs made of boxwood obtained from the shores of the Euxine. Golden combs were ascribed by the poets to the goddesses. Three combs, similar to modern small-tooth combs, are represented on the Amyclæan marbles. Roman combs, like the Greek, were made of boxwood, especially that obtained from the mountains of Cytorus, in Asia Minor, and remains of them have been found at Pompeii. Wood long continued the common material for combs, but during the later middle ages horn, ivory, and gold were sometimes employed, and pearls and precious and artificial stones were added for ornaments; and the comb was thus made an elegant part of the coiffure. Some modern sculptors, as Canova, have introduced it with fine effect as a part of feminine costume in statuary.—Ornamental combs of gold or silver have often been in general use by women; but the material longest and most commonly employed for this purpose is tortoise shell. The pieces of shell, as found in commerce, are never of suitable forms for combs. They are therefore softened with boiling water and put between iron or brass moulds of the desired shape until they cool. The place for the teeth is next marked. The interstices of the teeth were formerly cut with a thin steel saw, but a machine has been invented in which, by means of pressure, two combs are cut at the same time from the same strip of shell or ivory. The sides of the strip are to be the backs of the two combs, the teeth lying in the middle portion. The strip is fastened to a carriage, which is moved forward until it comes under the action of a ratchet wheel toothed upon a part of its circumference. The teeth of this wheel bring down a lever furnished with a chisel, which cuts out the two combs from the flat piece, the teeth of one lying between those of the other. This process is called parting, and is performed very rapidly and with great precision. So delicate are some of the saw machines, that from 80 to 100 teeth may be cut in an inch of ivory. Combs are now manufactured from vulcanized India rubber.

COMBACONUM, or **Kumbakonam,** a city of British India, in the Carnatic, 20 m. N. E. of Tanjore; pop. about 40,000. It is a place of great antiquity, is esteemed a holy city, and has several pagodas, gateways, and water tanks of

very superior construction. One of these tanks is said to be filled every 12th year by the waters of the Ganges, 1,200 m. distant, which enter the reservoir by a subterranean channel.



Great Gopura at Combaconum.

This water is held capable of purifying from sin and uncleanness every one who bathes in it, and thousands journey thither at the proper season to participate in its benefits. The great gopura or gate pyramid, at one of the entrances to the town, is referred to by Fergusson in his "Architecture" as one of the most imposing structures of its class. It has 12 stories, the lowest of granite, and the others of brick covered with the most elaborately ornamented stucco. A multitude of figures of men and animals cover it from top to bottom, forming a mass of peculiar ornamentation which greatly detracts from the imposing effect of the whole.

COMBALOT, Théodore, abbé, a French priest and author, born at Châtenay (Isère), Aug. 21, 1798, died in Paris, March 15, 1873. He studied philosophy and theology, was ordained priest in 1821, and acquired celebrity as an eloquent ultramontane preacher. Pope Gregory XVI. appointed him apostolic vicar, and in the latter part of his life he was vicar general of Rouen, Arras, and Montpellier. In 1844 he was sentenced to a month's imprisonment in consequence of his violent *Mémoire adressé aux évêques de France et aux pères de famille sur la guerre faite à la société par le monopole universitaire.* His other writings include *La connaissance de Jésus-Christ*, &c. (4th ed., 1852); *Conférence sur les grandeurs de la Sainte Vierge* (1845; new ed., 1854); and *Nouvelles conférences prêchées à Paris, à Lyons, en Belgique*, &c., *depuis le décret dogmatique de l'immaculée conception* (2 vols., Lyons, 1864).

COMBE. I. George, a Scottish phrenologist, born in Edinburgh, Oct. 21, 1788, died at Moor Park, England, Aug. 14, 1858. He studied law, and continued in practice till 1837, when he resolved to devote himself to science. On the visit of Spurzheim to Edinburgh in 1816 Combe became a convert to his system of phrenology, and advocated it in his lectures and writings. In 1819 he published "Essays on Phrenology, or an Inquiry into the System of Gall and Spurzheim," which was subsequently developed into his "System of Phrenology" (2 vols. 8vo, 1824). His principal work, "The Constitution of Man considered in relation to External Objects" (1828), produced a wide and deep impression. It has passed through numerous editions and been translated into several languages. The object of this work was to show that the intellectual and moral procedure of man, as well as the physical procedure of the universe, is regulated by natural laws which must be studied in order to carry out successfully his physical, moral, and social improvement. In 1823, assisted by a few friends, George and Andrew Combe established the "Edinburgh Phrenological Journal," and for more than 23 years gratuitously contributed to its pages. In 1833 he married a daughter of Mrs. Siddons, the celebrated actress. In 1837 he visited Germany; and in 1838, accompanied by his wife, he visited the United States, delivered 158 lectures in various parts of the country, and returned home in June, 1840. In 1842 he revisited Germany, and in the summer of that year delivered in Heidelberg a series of lectures on phrenology, in the German language. He was the first to spread a knowledge in England of the new religious movement in Germany, of which Ronge was the chief leader, by writing "Notes on the Reformation in Germany" (London, 1845). Among his other works are: "Elements of Phrenology" (1824); "Lectures on Popular Education" (1833); "Moral Philosophy, or the Duties of Man, Individual, Domestic, and Social" (1840); "Notes on the United States of America" (3 vols., 1841); "Thoughts on Capital Punishment," and "Remarks on National Education" (1847); "Principles of Criminal Legislation and Prison Discipline Investigated" (1854); "Phrenology applied to Painting and Sculpture" (1855); and "Relation between Science and Religion" (1857). **II. Abraham,** elder brother of the preceding, born Jan. 15, 1785, died Aug. 11, 1827. He was a disciple of Owen, and sacrificed his fortune in establishing "the coöperative society" in Edinburgh, in furtherance of his socialistic theories. Long after this had failed, he made

a new attempt in 1825, by forming a similar establishment on a large scale at Orbiston, near Glasgow, which however proved unsuccessful. He wrote "Sketches of the Old and New Systems," and "The Religious Creed of the New System." **III. Andrew,** a Scottish physician and author, brother of the preceding, born in Edinburgh, Oct. 27, 1797, died there, Aug. 9, 1847. He studied medicine in Edinburgh and Paris, and began practice in Edinburgh in 1823. In 1836 he was appointed physician to King Leopold of Belgium, and afterward physician in Scotland to Queen Victoria. He contributed largely to phrenological and medical journals. His principal works, all of which have passed through many editions, are: "Observations on Mental Derangement" (1831); "Principles of Physiology" (1834); "The Physiology of Digestion" (1836); and "The Management of Infancy" (1840). His death was hastened by exposure to the vitiated atmosphere of an emigrant ship in which he made a voyage to America; the knowledge which he gained on this voyage was embodied in a letter to the "Times," published a month after his death, which led to the passage of a law regulating the sanitary arrangements in emigrant vessels. His "Life and Correspondence" was published by his brother, George Combe (2 vols., Edinburgh, 1850).

COMBERMERE, Stapleton Cotton, viscount, a British soldier, born in Denbighshire, Nov. 17, 1773, died at Clifton, Feb. 21, 1865. He entered the army at an early age, and served in India in the war against Tippoo Saib. In 1808 he was sent to the peninsula in command of a brigade of cavalry, and participated in nearly all the great actions, from Talavera to the close of the war. In 1810 he was appointed to the command of the whole allied cavalry under the duke of Wellington. He was repeatedly thanked by parliament for his services, and upon the conclusion of peace was elevated to the peerage. He was afterward governor of Barbadoes, and commanded the British forces in India from 1822 to 1826. He also distinguished himself at the capture of Bhurtpoor (1826), for which he was made a viscount. In 1834 he was made a privy councillor, and in 1852 succeeded the duke of Wellington as constable of the tower of London and lord lieutenant of the Tower Hamlets. In 1855 he became field marshal.

COMBES, Edmond, a French traveller, born June 8, 1812, died in 1872. He was vice consul at Scala Nova, Asia Minor, and at Rabat, Morocco; explored the coasts of the Red sea, a portion of Arabia, Abyssinia, and E. Africa, where he was the first to ascertain the altitude of the mountains of the Moon; and in 1841 he travelled in Nubia and Egypt. With his companion, M. Tamisier, he published *Voyage en Abyssinie, dans les pays des Gallas, de Choa et d'Ifat, précédé d'une excursion dans l'Arabie Heureuse* (4 vols., Paris, 1837–'8).

COMBINATIONS, Theory of, in mathematics, a statement of the laws which determine the possible variations in the grouping of any number of given signs. The signs and groups are known as elements and forms. There are three processes of combination. The first, which is termed permutation, consists in changing the order of the given elements so that the same arrangement is never repeated. The second, which is specially termed combination, consists in arranging the elements into partial groups, so that, without regarding the arrangement, precisely the same elements are not repeated in any form. In permutation, all the elements are contained in each form. In combination, each form may consist of two, three, or any other number of elements less than the whole number given. The third process, termed variation, is a union of the other two. It consists in first making all the forms possible by combination, and then multiplying each of these forms by permutation. In permutation there is a change in the order; in combination, in the contents or matter; and in variation, in both. The complication and possible number of forms is greatly increased when the elements are repeated. The theory of combinations has application to ideas, sounds, colors, and even to food and other material compounds; but its principal use is in mathematical analysis and in the calculation of chances. The first important contribution to its development was by Buteo (1559), who represented all the throws possible with four dice. Pascal applied it to games, Mersenne to musical tones, and Guldin reckoned the number of words which could be formed from 23 letters. Leibnitz recognized its significance, and sought in vain to make use of it in discovering philosophical truths. Bernoulli and Euler labored upon it, but the first who gave it a scientific character was Hindenburg in 1778; and it was subsequently developed by Lagrange, Laplace, Poisson, Pfaff, Eschenbach, and Rothe. See *Lehrbuch der combinatorischen Analysis*, by Weingärtner (Leipsic, 1800–1801), and *Vollständiger Lehrbegriff der reinen Combinationslehre*, by Spehr (Brunswick, 1824).

COMBS, Leslie. See supplement.

COMBUSTION, a chemical process, in which bodies combine to form a new compound, with the evolution of heat, and usually light. In ordinary cases of combustion, oxygen is one of the combining bodies, and the substance with which it unites disappears with it in a gaseous form. It was formerly regarded as an essential element in combustion, but the phenomena of light and heat, characteristic of rapid combustion, are observed when chlorine combines with phosphorus and with some metals when these are in a powdered state; also in the action of cyanogen and potassium, and of sulphur upon iron filings and copper leaf. Some bodies also burn in the vapors of iodine, bromine, and fluorine. As commonly witnessed, combustion is a process taking place in the presence of atmospheric air, which furnishes the oxygen to support it; and it is conducted, not, as most other chemical operations are, for the sake of its products, but

for the phenomena which attend it. The development of these depends upon the rapidity with which it goes on, and this distinguishes it from the other cases of oxidation, which are sometimes called slow combustion, as when metals rust, spirituous liquors turn to acetic acid, and the blood by respiration is oxidized. The views which prevailed respecting the nature of combustion before the discovery of oxygen gas by Priestley in 1774, and the development of its properties by Lavoisier in the succeeding year, were necessarily incorrect. With the ancients, fire was an element that devoured other bodies and converted them into itself. Dr. Hooke in 1665, and Mayow soon after, advanced the opinion that there existed in the air a "nitrous spirit," which dissolved bodies susceptible to its influence when their temperature was suitably raised, and that the light and heat were the sensible effects of the rapid motions taking place. This theory, though close to the truth, was for a long time lost sight of in the general acceptance of the celebrated phlogistic theory, which was advanced soon afterward by Becher, professor at Mentz, and ably sustained by Stahl, professor at Halle. They considered that in combustion a certain element, which Stahl named phlogiston (from Gr. φλογίζειν, to burn), left the burning body, and the product was this body deprived of its phlogiston, by regaining which it was restored to its original character; as sulphur or phosphorus when consumed became sulphuric or phosphoric acid, and on regaining their phlogiston were again sulphur or phosphorus. It was known that the earthy "calx," into which some of the metals were transformed by fire, gained rather than lost weight; but this was explained by attributing to phlogiston a principle of levity. Notwithstanding the defects of the theory, it was still an important step in the progress of chemical science, serving first to group correctly together the phenomena of combustion, acidification, and respiration. Its nomenclature was incorporated with the science, and when Priestley made his great discovery of the new kinds of air, he gave to nitrogen, which he supposed to be a combination of air with the phlogiston of the combustible, the name of phlogisticated air, and to oxygen or pure air that of dephlogisticated air. Lavoisier, by subjecting the products of combustion to the test of weighing, showed that the combustible gained weight by the process, and he proved, on restoring it to its former condition (as in the case of a metallic oxide), that the substance taken up and given out again was the pure air of Priestley, to which he gave the name of oxygen, from its acidifying property (ὀξύς and γεννάω). Thus was established the antiphlogistic theory, that in every case of combustion oxygen combines with the burning body. Dr. Black's theory of latent heat was adopted to account for the production of light and heat; the latter being evolved or rendered sensible when substances without change of form pass from a rarer into a denser state, also when a gas becomes liquid or solid, or a liquid solidifies. The oxygen of the air was supposed to contain heat and light in a latent state, which were evolved with its change into a more condensed form, and the products of combustion were supposed to have less combined or specific heat than the original substances. But this application failed in the case of combustion of solid bodies by explosion, the gaseous compounds expanding in some instances to 2,000 times their original bulk, and yet producing intense heat instead of cold, as the theory would require; and the specific heat of the new compounds, in this as in the combustion of charcoal, it was shown by Dulong and Petit, was often quite equal to, and sometimes exceeded, that of the combining bodies, and this, moreover, bore no relation to that evolved in combustion. Davy considered that the burning body and the supporter of combustion were in opposite electrical conditions, and that the heat and light were evolved in the discharge of these electricities; which view was also held by Berzelius, though unsustained by any positive proof. Despretz ascertained the number of pounds of water which the burning of 1 lb. of different combustibles would heat from the temperature of 32° to 212° F. The following are some of his results:

1 lb. of	Lbs. of water.
Pure charcoal	78
Charcoal from wood	75
Baked wood	36
Bituminous coal	60
Wood containing 20 per cent. of water	27
Turf	25 to 30
Alcohol	67·5
Olive oil, wax, &c	90 to 95
Ether	80
Hydrogen	236·4

Carbon and hydrogen are the two common elements, which by uniting with oxygen produce combustion. They are furnished in a variety of forms suitable to this application, the source of all which is traced to vegetable growth; and this ever continues to gather up the products of combustion, and, separating them by decomposition, places them again in condition to renew the process. In combination they assume a volatile form, and float upward with the air rarefied by the heat, thus allowing the admission of fresh supplies of oxygen to constantly reach the ignited body. Though the combustible bodies are enveloped in the atmospheric air, and are ever disposed to unite with its oxygen, the process cannot commence until the temperature of the combustible has been raised to a certain point, when it is said to catch fire; the process thus begins, and afterward evolves the heat necessary for its continuance.—The condition of the air as to temperature, density, and the presence of aqueous vapor, variously affects the process of combustion. Increase of density adds to the quantity of oxygen in a given volume, and consequently may be expected to increase the rate of combustion. The effect of

temperature is less understood, but so far as it diminishes the density of air it must retard combustion. A sensible difference is perceived in the rate of combustion of large fires connected with metallurgical operations in summer and winter, which is no doubt correctly attributed to the volatile products of combustion not so freely quitting the burning bodies to rise up in the rarefied air of summer as in the denser winter atmosphere, and thus retarding the operations. Aqueous vapor in some circumstances is found to retard combustion, in others to accelerate it. Unless subjected to the degree of heat necessary to decompose it, it takes the place of atmospheric air, and diminishes the proportion of effective oxygen present. Steam is employed as an active agent for extinguishing fires, and also in small quantity to increase their effect. For this purpose a jet of steam is discharged under the grate bars of a furnace, or the ash pit is made a reservoir for water, which is evaporated by the heat radiated downward, and the vapor carried up by the draught is decomposed in passing through the incandescent coals. Its oxygen takes up a portion of carbon, forming carbonic oxide, which, as it meets more oxygen, is converted into carbonic acid gas with the production of much heat. So its hydrogen seizes a portion of the highly heated carbon, and is converted into carburetted hydrogen, or in part escapes, till meeting an equivalent of oxygen it is burned with the reproduction of water. It was shown by the numerous experiments of Bunsen and Fyfe that a considerable increase of heat was thus gained over that consumed in the decomposition of the vapor. Its use, however, in practical operations, demands the exercise of some judgment; for in excess, or with insufficient supplies of air, its effect would be the reverse of that intended. So also the vapor should be made to come up through the bars, and not be raised from among the coals at the cost of a portion of the available heat generated by their combustion.—An opinion has long been current, and not among the unlearned alone, that combustion was retarded by the light of the sun shining upon the fire. This apparent effect is accounted for by some on the principle that all flames are less visible in a strong light. On the other hand, a series of experiments made by Dr. Thomas McKeever of England, and published in the "Annals of Philosophy" in 1825, support by their results the popular impression, and these conclusions are referred to by Gmelin in his "Handbook of Chemistry," without questioning their soundness. In these experiments tapers and candles were burned alternately in a dark room and in the sunshine in the open air, the result always being a more rapid combustion in the former. The chemical rays of the solar beam were supposed to interfere with the oxidation of the fuel, and this was confirmed by the apparent greater rapidity with which a taper was made to burn in the red than in the violet extremity of the solar spectrum. In 1857 a paper was read before the American association for the promotion of science, by Prof. J. L. Le Conte, describing a series of experiments recently made by him with the object of further testing this question. In these he adopted the precaution of securing absolute calmness in the atmosphere around the burning body, and of depriving the beam of light of its sensible heat, which might, by rarefying the air, retard combustion. He also by concentrating the rays increased the intensity of the solar light nearly tenfold, with the view of thus exaggerating and rendering more apparent their supposed influence. The cone of sunlight was made to strike upon the flame of a wax candle, counterpoised in a balance, its lower margin illuminating the charred portion of the wick, while the upper boundary of the pencil traversed the flame near its apex. In each experiment the candle was allowed to burn for 10 or 15 minutes, till a steady flame was obtained; and then, as soon as its weight was reduced to that in the opposite scale, a certain quantity (60 or 100 grs.) was removed from this, and the combustion was continued till the equilibrium was again established. Whether in the dark or in the sunlight, no sensible difference was found in the rate of combustion; but this decidedly varied with the conditions of the atmosphere as to barometric pressure and temperature.

COMBUSTION, Spontaneous, the ignition of inflammable bodies without the application of fire, and without obvious cause of increase of temperature. Occurrences of this sort, formerly very mysterious, are now explained by the well understood liability of certain bodies to undergo chemical changes which develop sufficient heat to set them on fire. Recently expressed fixed oils are particularly disposed to oxidize when exposed to light and air. They then absorb oxygen, and give out carbonic acid and hydrogen. If the process goes on rapidly, as it usually does when the oil is diffused through light inflammable substances, as cotton, tow, the waste used for lubricating machinery, oatmeal, &c., the heat may be sufficient to set these on fire. This is the most frequent cause of spontaneous combustion. Cloths saturated with oil, or covered with varnish of oil and turpentine, have thus been inflamed. By being piled together in quantity, the danger is increased by the accumulation of heat. In consequence of the frequent occurrence of cases of spontaneous combustion in "charged silks," or silks that have been treated with grease or oil for the purpose of increasing their weight, the German railways in 1872 refused to receive them for transportation. Bituminous coal lying in large heaps is liable to be ignited by the heat evolved in the decomposition of the sulphuret of iron which it commonly contains. At the mouths of the pits the slates and refuse coal, which contain the most of this mineral, and in which the process of de-

composition is hastened by the heaps being wet with the rains, are often seen in combustion from this cause. The liability to it seriously affects the value of those coals in which pyrites is found in considerable quantity, rendering it hazardous even to transport them by ships. In 1794 a fire occurred from this cause in the royal shipyard in Copenhagen, which consumed 1,600 tons of coal and 1,400 houses. The rapid absorption of water by quicklime is also attended with development of heat sufficient to ignite combustible bodies in contact with the lime. Freshly burned charcoal has the property of absorbing moisture and rapidly condensing it in its pores, generating thereby so much heat that it is set on fire. This often occurs about collieries and in the wagons used for transporting the coal from the woods, and is commonly attributed to the fire not being entirely extinguished in all the pieces of charcoal. Several cases are recorded in the "American Journal of Science" (vol. xlii., 1842, pp. 169 to 195) of combustion occurring in heaps of hard-wood ashes which had long lain undisturbed. The cause not being understood, they were in several instances regarded as cases of spontaneous combustion. It would seem, however, that addition of fresh ashes had been made to the heaps within a few days, or 14 at the most. Still no satisfactory explanation is given of the manner in which a heap of 25 bushels, accumulated during two years previous, could become completely ignited, as occurred in the cellar of President Lord of Dartmouth college; nor how the combustion could commence in the centre of a box of ashes which had received no addition for about two weeks, as described by Dr. J. T. Plummer of Richmond, Ind. Such instances, however they may be explained, exhibit the danger incurred by placing ashes in wooden vessels or in contact with combustible bodies; and the danger would appear to be at all times imminent, though the ashes may have thus remained quietly for two years.—**Human Spontaneous Combustion.** This is now generally believed to be a fiction; but it has been used with great effect by modern temperance lecturers and by novelists. Herman Melville so disposes of an obnoxious character in "Redburn" (1849); and Dickens, in "Bleak House" (1853), made the case of Krook famous, and excited an animated discussion which revived public interest in the subject. But that it has been firmly believed by many eminent medical authorities, and has been a matter of earnest though not entirely satisfactory inquiry by others, will be evident from the citation of the following authorities and cases. Foderé notes an instance which occurred in Lyons in 1644. Devergie, in his *Médecine légale*, records 20 cases, the earliest in 1692, and two thirds of them before the beginning of the present century. The *Dictionnaire de Médecine*, article *Combustion humaine*, cites the opinions of different writers down to the year 1833. Dr. Apjohn, in the "Cyclopædia of Practical Medicine," gives what he considers authentic cases. The fullest information on the subject is in the *Journal de Physique*, in an article by Pierre Aimé Lair, translated and published in "Philosophical Transactions," vol. vi. Among the remarkable cases recorded are the following: Le Cat narrates that while he was lodging in the house of Millet at Rheims, on the morning of Feb. 20, 1725, the body of Mme. Millet, a habitual inebriate, was found at the distance of a foot and a half from the hearth in her kitchen. A part of the head only, with a portion of the lower extremities and a few of the vertebræ, had escaped combustion. A small portion of the floor under the body had been consumed, but a kneading trough and a tub which stood very near were uninjured. Millet was arrested for the murder of his wife, a supposed intrigue with his servant girl furnishing the motive. He was tried and convicted; but on appeal to a superior court he was acquitted on the plea of spontaneous combustion. A more celebrated case, six years later, was that of the countess Cornelia de Baudi Cesenati, of Verona. She was 62 years old, and was accustomed to bathe in camphorated spirits of wine. Retiring one night in good health, the next morning her body was found on the floor, four feet from the bed, a mass of cinders. The walls and furniture of her room, and the walls, shelves, and utensils in an adjoining kitchen, were coated with a moist black soot, and a crust of bread was so contaminated that it was rejected by the cat. Prebendary Giuseppe Bianchini minutely investigated the case, and published an account of it at Verona in 1731, and afterward at Rome. It furnished, as is intimated in the preface to "Bleak House," the precedent for the remarkable death of Krook. "The appearances beyond all rational doubt observed in that case," says Dickens, "are the appearances observed in Mr. Krook's case." The case of Mary Clues first appeared in the "Annual Register" for 1773. She was 50 years old, and was much addicted to intoxication. One night she retired, leaving a lighted candle on a chair near her bed. The next morning her remains were found on the floor between the bed and the chimney. The skin, muscles, and viscera were destroyed; the bones of the cranium, breast, spine, and upper extremities were calcined and covered with a whitish efflorescence; one leg and a thigh were still entire. The room was filled with a very disagreeable vapor; the walls and everything in the room were blackened; but, except the body, nothing exhibited any very strong traces of fire. An almost parallel case is that of Grace Pitt, aged 60, published in the "Transactions of the Royal Society of London" in 1774. Foderé records the remarkable death of Don Gio Maria Bertholi, in 1776. The account is abridged by Paris and Fonblanque in their "Medical Jurisprudence," and the case is one of the best authenticated to be found.

In 1840 the *Bulletin de Thérapeutique* published an account by M. Bubbe-Liévin, surgeon in the army in Algeria in 1839, of the death of a Moor, a habitual drunkard, where the phenomenon was a bluish flame running all over the body, making frightful burns; but the surgeon saw only the results of the combustion, and derived the details from the natives, who probably embellished the facts. In 1839 Dupuytren investigated a supposed case of spontaneous combustion. The victim was an excessively fleshy woman, and addicted to drink; but Dupuytren discovered that she had been sitting over a foot stove filled with burning charcoal, and his theory was as follows: Stupor, due first to alcohol, and heightened by the fumes of the charcoal; the clothes take fire; the epidermis cracks open and streams of melted human fat run out and burn; combustion continues as long as any fragments of cloth saturated with fat remain unconsumed; the room is filled with dense black smoke; and, finally, the victim presents only a mass of charred flesh and bones. The case of the countess of Görlitz, found dead in her chamber, June 13, 1847, excited attention throughout Europe. The upper part of her dress was burned, and her head, neck, and arms were charred. The floor and furniture were much damaged by fire. The physician who examined the remains pronounced the case one of spontaneous combustion. In the year following, Aug. 11, the remains were exhumed, and Liebig and Bischoff, who examined them, published in 1850 their report, exploding the theory of spontaneous combustion. In March of that year Stauff, the count's valet, was tried and convicted for murdering the countess. Subsequently he confessed the crime, and said that the countess having surprised him in an attempt to rob her room, he strangled her, and afterward piled furniture around her body and set it on fire. In 1850 a supposed case had a wide circulation in the French and English journals, and was quoted by Dean in his "Medical Jurisprudence." It was that of a laborer, drinking in a cabaret near the barrière de l'Étoile, Paris. He wagered that he would eat a lighted candle, and had hardly brought it near his mouth when, with a faint cry, he fell lifeless. A bluish flame flickered about his lips, he consumed inwardly, and in half an hour his head and part of his chest were reduced to charcoal. On the publication of this extraordinary case, Liebig at once wrote to Professors Regnault and Pélouze, and to Carlier, the prefect of police, asking for further information. This he immediately received from Carlier, to the effect that the case was wholly imaginary, originating only in the fertile fancy of a sensational journalist. In two cases in England, one in 1854 and the other in 1860, where all the accepted phenomena of spontaneous combustion were present, rigid examination by experts discovered that the victims had been murdered, and an attempt made to burn the bodies to conceal the crime. But in the apparently authenticated cases cited above, as the victims were generally drunkards, the hypothesis has been that their bodies were rendered exceptionally combustible, and for a long while this theory obtained credence. But after a while chemists began to discredit the cases. It was shown that combustion could not occur without an abundant supply of oxygen; that the soft parts of the human body contain 72 per cent. of water, which must be evaporated before consumption by fire can take place; and instances of the extraordinary difficulty of consuming the bodies of persons burned at the stake were adduced. It is noteworthy, too, that nearly all of the supposed authentic cases agree essentially in the following particulars: That the victim is almost always a fat woman, an inebriate, and in some instances addicted to getting up in the night to smoke a pipe, or to sit by the fire; nine out of ten of the supposed cases have occurred in cold weather; and in nearly every case the remains were found near a grate, fireplace, or candle. Dr. Robert Macnish, in his "Anatomy of Drunkenness" (Edinburgh, 1827), says that when "writers like Vicq d'Azyr, Le Cat, Maffei, Jacobæus, Rolli, Bianchini, and Mason and Good, have given their testimony in support of such facts, it requires some effort to believe them unfounded in truth." But he thinks that the witnesses in supposed cases "have been led into an unintentional misrepresentation," and says further: "The subject has never been satisfactorily investigated; and notwithstanding the cases brought forward in support of the doctrine, the general opinion seems to be that the whole is fable, or at least so much involved in obscurity as to afford no just grounds for belief." This was written long before the thorough examinations by Liebig, Bischoff, and other experts, since 1850, whose reports are decidedly adverse to the hypothesis of spontaneous human combustion.

COMEDY. See Drama.

COMENIUS, John Amos, a Czech, whose real name was Komensky, remarkable for his early attempts at reforming education, born at Komna in Moravia, March 28, 1592, died in Holland, Nov. 15, 1671. He studied in Heidelberg and Herborn, and was a teacher in Prerau and Fulneck from 1614 to 1620, when, in the general persecution of Protestants which followed the reverses of the insurgents in Bohemia and Moravia, he lost all his fortune and was expatriated, and for some time lived as a teacher in a retired part of the Bohemian mountains. From 1632 he was pastor of the sect of the Bohemian Brethren at Lissa, then in Poland. In 1641 he was invited to England to reform the schools, in which however he did not succeed, on account of the civil dissensions. At the request of Oxenstiern he now applied himself to the organization of a system for Swedish schools, though residing in Elbing, W.

Prussia. He subsequently repaired to Transylvania, and in 1650 elaborated rules for the Protestant college of Sáros-Patak in Hungary. Returning to Lissa in 1654, he again lost all his books, manuscripts, and fortune by the Polish war of 1657, and spent the latter part of his life in Holland. As a writer in the Czech language he is highly esteemed for his classical style. As a school reformer he was the forerunner of Rousseau, Basedow, and Pestalozzi, suggested a mode of instruction which renders learning attractive by pictures and illustrations, and wrote the first pictorial school book, *Orbis Sensualium Pictus* (Nuremberg, 1658). For instruction in foreign languages he recommended combining with the teaching of the foreign words explanations of the ideas they express. His most celebrated works in this department, *Janua Linguarum Reserrata* (Lissa, 1631), and *Pansophiæ Prodromus* (Lissa, 1639), were translated into many languages.

COMET (Gr. κομήτης, long-haired), a celestial body presenting a nebulous aspect, and travelling under the sun's attraction. Many of these bodies are distinguished by a remarkable tail-like appendage. The greater number of those hitherto known have revolved round the sun on a path whose observed portion belonged to an exceedingly elongated ellipse, or was even parabolic or hyperbolic. A few, however, travel in closed orbits around the sun in known periods. It has been supposed that some among the ancients suspected the periodic motions of the planets; but the only evidence we have on the subject is vague and indefinite. Tycho Brahe was the first to prove by direct observation that comets are not mere phenomena of our own atmosphere, but certainly further away than the moon. Newton, after establishing the theory of gravitation, asserted that comets obey the laws of solar attraction, and therefore move either on elliptic, parabolic, or hyperbolic paths. From observations of the comet of 1680 (commonly called Newton's comet) Dörfel, a clergyman of Saxony, was led to the conclusion that the course of this object was parabolic. But the first real proof of the nature of cometary orbits was afforded by the researches of Halley into the motions of the comet of 1682 (Halley's comet). Halley computed the orbit of this comet, and having found that the figure of the orbit was either parabolic or a very extended ellipse, he examined the records of ancient comets, and after incredible labor succeeded in discovering two whose motions agreed very closely with those of the comet of 1682. One had been observed by Appian in 1531, the other by Kepler in 1607; and Halley noticed that the intervals between the three years 1531, 1607, and 1682 are near enough to equality to suggest that one and the same comet had been observed on all three occasions. Finding that comets were observed in 1305, 1380, and 1456, he was further confirmed in the idea of the periodicity of this comet's returns; and he was thus led to predict the return of the comet about the end of 1758 or the beginning of 1759. He placed the return somewhat later than the former observed intervals would have suggested, because he found that the attraction of Jupiter would retard the comet. When the time for its return approached, many eminent mathematicians recomputed the date of its perihelion passage, and Clairaut announced that this passage would occur between March 13 and May 13, 1759. The event actually took place on March 13, 1759; and it has been shown that a large part of the discrepancy between this date and the mean date of Clairaut's two months would have been removed had Clairaut known of the existence of Uranus, and so taken the disturbing influence of that planet into account. On the next return of the comet in 1835, the epoch of perihelion passage was predicted much more accurately; indeed, the actual event occurred within two or three days of the dates severally announced by Pontécoulant and Rosenberger. The observations of other comets have still further confirmed Newton's theory of cometic motions.—All comets show a *coma* or haze of light. In nearly all cases there is a bright nucleus within this haze, and in a considerable number of instances, but not by any means in all, the comet shows a tail. When a large and complete comet, that is, a comet which possesses a coma, nucleus, and tail, is approaching the sun, the haze of light usually changes from a rounded to an elongated figure. Afterward the comet's light presents a streaky or "combed out" appearance, and then presently a tail is thrown out on the side away from the sun. The tail usually grows longer and brighter as the comet approaches the sun, and continues in existence for some time after the comet has begun to pass away from the sun's neighborhood. But there is a considerable variety in this respect among different comets. Some which have shown beautiful tails as they neared the sun, have reappeared after the perihelion passage with only a short tail or without any tail at all. Others which have shown only insignificant tails while approaching their perihelion, have "reappeared magnified and glorified, throwing out an immense tail and exhibiting every appearance of violent excitement." Most of the comets of short period are tailless or have tails barely discernible. An examination of the drawings prepared for the third volume of the "Annals of the Observatory of Harvard College," to accompany the record of Prof. Bond's observations on Donati's comet of 1858, will teach more respecting the actual processes of change which large comets undergo than any amount of verbal description. It has been justly remarked by Sir John Herschel that these "engravings, in point of exquisite finish and beauty of delineation, leave far behind everything hitherto done in that department of astronomy."—Among the comets most remarkable either for great splendor or enormous real dimensions in recent times

must be mentioned those of 1780, 1807, 1811, 1815, 1819, 1825, 1843, 1847, 1858, and 1861. Among the most remarkable phenomena presented by individual comets we may mention the six tails of the great comet of 1744, and the division of Biela's comet into two distinct comets, each having coma, nucleus, and tail. The latter phenomenon was first observed on Jan. 12, 1846, at the Washington observatory. Three days later European observers noted the same phenomenon. The two comets pursued their course side by side, with singular interchanges of lustre, now one, now the other appearing the brighter. At the return of the comet in 1852 both the comets were still visible in the same telescopic field of view. The perihelion passage of 1859 took place (if at all) under circumstances unfavorable for observation. The return of 1865 should have been readily observable; but the comet was not seen, nor has it since made its appearance. "Can it have come," says Sir John Herschel, "into contact with some asteroid as yet undiscovered, or peradventure plunged into and got bewildered among the rings of meteorites, which astronomers more than suspect?"—The recent discovery of the fact that the November and August meteor systems follow in the track of two comets (the November meteors following the telescopic comet No. I., 1866, and the August meteors following the conspicuous comet of 1862), has led to some interesting speculations respecting the nature of comets and meteors. Schiaparelli, to whom the discovery is in part due, considers the meteors to be dispersed portions of the comet's original substance, that is, of the substance with which the comet entered the solar domain. Thus comets would come to be regarded as consisting of a multitude of relatively minute masses. Others, however, regard comets as chiefly gaseous, and the meteors as due to the solidification of portions of the gaseous coma which have been swept off by the repulsive action which forms the tail. Spectroscopic analysis has thrown some light on cometic structure, though hitherto only faint comets have been subject to careful analysis according to recent methods. Four comets examined by Dr. Huggins of England showed spectra indicative of gaseousness, so far as the nucleus and the brighter part of the coma are concerned. The outer part of the coma seems to shine in part by reflecting solar light. Two of the comets thus examined have shown a spectrum singularly like one of the spectra of carbon. Yet it is difficult to understand how carbon can be present in the form of luminous gas under the conditions actually existing in the case of these comets. The spectroscopic observations by Dr. Huggins on the latest arrival, Encke's comet, have been in all respects confirmed by Prof. Young of Dartmouth college. The motions of Encke's comet, observed on many successive returns, seem to indicate the existence of a resisting medium; but Sir John Herschel has suggested another explanation; and Prof. Asaph Hall has shown in the "American Journal of Science and Arts" for December, 1871, that if resistance is actually in question, such resistance affects Encke's comet in an exceptional manner, for other well known periodic comets show no traces of its effects. All the comets having a period not exceeding seven years travel in the same direction around the sun as the planets, as well as five sixths of those which have periods less than 80 years long. See supplement.

COMFREY (*symphytum officinale*), a plant of the order *borraginaceæ*, a native of Europe, but raised in our gardens. It was formerly imagined to promote the healing of wounds, or even of broken bones, a superstition of which



Comfrey (Symphytum officinale).

traces have remained until the present time. Its virtues are simply those of a demulcent.

COMINES, or **Comynes, Philippe de,** a French statesman and historian, born at the château of Comines, near Lille, in 1445, died at his domain of Argenton in 1509. He stood high in the favor of Charles the Bold of Burgundy, and on occasion of Louis XI.'s imprisonment by Charles at Péronne succeeded in bringing about a treaty of peace between them. In 1472 he forsook the cause of the duke of Burgundy and became councillor and chamberlain of Louis XI., who compensated him so amply for the loss of his property, which had been confiscated by Charles, that he soon became one of the most wealthy and influential noblemen in France. The death of Louis, however, proved fatal to his fortunes. He was no favorite with Anne de Beaujeu, the regent, and was imprisoned on a charge of conspiracy against her. On the accession of Charles VIII. he was again employed in the public service, but went into retirement after the advent of Louis XII., who seemed reluctant to favor him, although he left him in possession of a pension. The fame of Comines rests not only upon his astuteness as a statesman, but still

more upon his *Mémoires*, which give a complete view of the political affairs of his time, and present a vivid picture of the character of Louis XI. They have been frequently printed. Lenglet Dufresnoy's edition (4 vols. 4to, London, 1747) is especially valuable on account of its annotations; but the best and most recent is that published by Mlle. Dupont for the society of French history (3 vols. 8vo, Paris, 1850). Comines figures in Scott's romance of "Quentin Durward."

COMITAN, or **Comitlan,** a town in the state of Chiapas, Mexico, on the river Grijalva, an affluent of the Tabasco, about 40 m. S. E. of San Cristóbal; pop. 10,000. It is well built, and has a fine church and a large Dominican convent, and some trade in cochineal, sugar, and cotton. Its inhabitants are generally in prosperous circumstances, living on the incomes of their haciendas in the neighborhood, which they cultivate by the labor of Indians.

COMITIA, the public assemblies of the Roman people for the transaction of important political business. There were three different kinds of comitia, corresponding to the three great divisions of the Romans: the *comitia curiata*, the *comitia centuriata*, and the *comitia tributa*. The comitia curiata, or assemblies of the *curiæ*, were the original assemblies said to have been instituted by Romulus, and managed all the great concerns of state prior to the establishment of the comitia centuriata. They elected the kings and other chief magistrates, enacted and abrogated laws, and judged capital offenders. After the institution of the comitia centuriata, their prerogatives were gradually abridged, till almost all the great powers which they once exercised were wrested from them, and hardly any remained with them, save those minor ones which they had possessed from the beginning, in common with the higher rights annulled. The comitia curiata were originally called together by the kings, but in republican times generally by some great secular or sacerdotal magistrate. They were composed of those Roman citizens who were members of the curiæ, dwelt within the *pomœrium*, and conformed to the customs and rights of their respective wards. The meetings were not held periodically, but as often as there was business to transact. When the members were assembled, and the omens propitious, the *rogatio*, or matter to be considered, was read, and then each curia, after deciding apart on the question, gave its vote, and the votes of the majority of the curiæ determined the fate of the measure, or, if it was a case of election, that of the candidates. These assemblies were held in that part of the forum called the *comitium*. The comitia centuriata were instituted by Servius Tullius, the sixth king of Rome, with the view apparently of uniting in one body the different sections of the Roman people. Having compelled every man to give in an accurate account of his property, he divided the citizens into six classes, according to their wealth, which he subdivided, according to Dionysius, into 193 centuries. Of these centuries he composed the comitia centuriata, which were held in the Campus Martius, for the election of consuls, censors, and prætors, for the trial of persons accused of what was termed *crimen perduellionis*, or treason, and for the confirmation or rejection of such laws as might be submitted to their consideration. The most usual time of meeting was about the end of July or beginning of August in each year. When the centuries were assembled, they cast lots for priority of suffrage, and the century to which the lot fell voted first, and was styled *centuria prærogativa*. All the others voted in the order of their classes, and as they were summoned, and were thence termed *jure vocatæ*. The presiding magistrate having ordered the prerogative century to be called out to give their suffrages, its members came forward and entered an enclosed space named *septum* or *ovile*, where, if it was a case of election, every man received as many tablets as there were candidates, every tablet having inscribed on it the initial letters of one candidate's name. The *septa* contained numerous large ballot boxes, and into one of these the voter cast that tablet which bore the initials of the name of the candidate whom he favored. If, however, it was a question of the confirmation or rejection of a law, only two tablets were handed to each voter, on one of which were written *U. R.*, the initial letters of *Uti rogas*, "As thou desirest," and on the other *A.*, the first letter of *Antiquo*, "For the old," *i. e.*, the old law (against the new). At each ballot box were stationed certain officers called *custodes*, who took the tablets of every century out of the ballot box, and numbered them by putting a puncture in another tablet for every one deposited. Before the introduction of the ballot system, however, when every citizen voted *viva voce*, an officer called a *rogator*, stationed at the entrance of the septum, asked each individual for his vote. In the election of magistrates, or the confirmation or rejection of laws, equality of suffrages nullified the vote of the century; but in juridical cases equality of suffrages was deemed an acquittal of the accused. The *comitia tributa*, or assemblies of the tribes, were not established till 491 B. C. They were sometimes presided over by the tribunes of the people, sometimes by the consuls or prætors, and were summoned for the election of tribunes, ædiles, quæstors, and other inferior magistrates, for the trial of minor criminals, and for the enactment of special and general statutes. Their place of meeting was not fixed; occasionally they were convened in the Campus Martius, occasionally in the forum, and at times in the circus Flaminius. These were the democratic comitia. Their laws were termed *plebiscita*, or decrees of the plebs, and, unlike the other comitia, they could be called together without the sanction of the senate. Besides these great assem-

blies, there were in the later ages of the republic lesser comitia, termed *comitia calata*, which were held for the election of priests and the regulation of testamentary matters, and in which the people acted only as witnesses.

COMMANDERY, a species of benefice, or an honorary dignity, belonging to certain of the orders of chivalry, and conferred upon aged knights who had rendered worthy services to the order or to the state. The term was first used in the 13th century, and was applied to sums saved from the revenues of the order for the support of warriors fighting against the Mohammedans. It was afterward applied to benefices distant from the residence of the order, and over which a knight was set to collect the revenues. Subsequently, the system of benefices having been abolished with the decline of feudalism, the orders of chivalry preserved the name after they had lost the substance, and conferred the honorary dignity and the title of what had formerly been a revenue. Among the knights of Malta, those to whom commanderies were given were called commanders, and were rather the farmers than the beneficiaries of the order, since they paid a certain rent or tribute to the common treasury. The grand commander was the first dignitary of the order after the grand master. When the religious houses in England were suppressed by Henry VIII. there were more than 50 commanderies in the country. There were commanderies also in the orders of St. Bernard and St. Anthony, and in the Spanish orders of Santiago, of Calatrava, and of Alcántara.

COMMODORE (It. *commendatore*, a commander), a naval officer who usually commands a squadron of ships upon particular service, his own ship being distinguished by a broad pennant worn at the main. In the navy of the United States, by an act of congress of July 16, 1862, a commodore ranks between a rear admiral and a captain; the grade corresponds with that of a brigadier general in the army. Previous to that act commodore was only a title of courtesy in the American navy, captain having been the highest actual rank till 1857, when a law of congress created the title of flag officer for the commander of a squadron.

COMMODUS ANTONINUS, Lucius Aurelius, emperor of Rome, born at Lanuvium, A. D. 161, assassinated Dec. 31, 192. He was the son of Marcus Aurelius and the younger Faustina, daughter of Antoninus Pius. He inherited all the vices of his mother, without any of the virtues of his father, and his advent to the throne in 180 was the signal for a series of cruelties, rivalling if not surpassing those of Caligula and Nero. Hastily making peace with the Quadi and other German tribes, he gave himself up to the vilest debauchery, and even his own sisters became the victims of his lust. Appearing as Hercules before the people, he slew thousands of beasts with bow and spear, and fought publicly as a gladiator many hundred times, while the affairs of the government were left in the hands of the freedmen Perennis, Anterus, Cleander, Lætus, Eclectus, and other worthless favorites. The enormous taxes requisite to support his extravagance, a conflagration of Rome, and a famine, at length drove the people to despair, and disturbances broke out which caused the death of Cleander. Finally, his own favorites, finding that they were marked for execution, resolved upon his death; and the poison administered by his concubine Marcia working too slowly, the gladiator Narcissus was called to strangle him. The senate declared him an enemy of the republic, and commanded his statues to be broken, and his name to be erased from the public inscriptions. Several detected conspiracies, some victories over the Caledonians achieved by Ulpius Marcellus, and the addition of an African corn fleet to that of Egypt, are the principal events of his reign.

COMMON, Rights of, the use for certain purposes of land belonging to another. In the ancient law they were designated as common of pasture, of piscary, of turbary, and of estovers, and this classification is retained by Blackstone; but it lacks precision, for piscary does not belong to lands at all; and again, the right to the use of the water for fishing, &c., is in many cases all the estate that can be claimed by any one, and there are instances where such use is common to all persons without distinction. There is but one case which would come within the definition, and that is common of piscary in inland waters, the land under which is by the common law held to belong to the owner of the soil adjoining the water. This would give such owner the exclusive use of the water, except for navigation, but a prescriptive right may be acquired by another having no interest in the fee. The other rights relate altogether to husbandry, and consist of the right to pasture cattle or other animals belonging to farmers upon lands of another, and to cut turf and wood for necessary fuel and repairs. The common of pasturage is the most important of these, and has been treated of in the books much more fully than the others, but the principles applicable to each are substantially the same. This right is in the old cases held to be appendant, appurtenant, because of vicinage, or in gross. It was appendant when it belonged to arable lands which were originally part of the manor in which the common was claimed, and the commonable right was in such case limited to beasts of the plough, and such as were used for manure. Common appurtenant had no necessary connection of tenure, but might be claimed in other manors than that to which the land whereto the common was appurtenant originally belonged. Nor was it limited to any particular animals, but included every description, as hogs, goats, &c., as well as those which were used in tillage. The difference in origin between these two was that the former grew out of the origi-

nal tenure, and was a general right incident to all smaller estates parcelled out from larger ones, which did not need prescription to sustain; the latter was founded solely upon grant, or upon prescription which always implied a grant. Both continued to exist notwithstanding the alienation of the lands to which the common was appendant or appurtenant, and in case of alienation of part of such lands, the alienee acquired a commonable right in the proportion the lands conveyed bore to the entirety to which the right originally belonged. This equitable principle was adopted to prevent the overcharge of commonable lands by the multiplication of rights from the successive division of estates, so that there could be no increase of the original right; but whatever number of tenants became entitled, they could each have only their proportionate share. Thus the claim of a tenant who by the process of subdivision had become the proprietor of one yard of land, but set up a right of common appendant for the pasturage of 64 sheep (which was the whole right that belonged to the entirety of the original premises), was rejected. (Bennett *v.* Reeve, Willes's Rep., 227.) This case attracted much attention on account of the great amount of learning and ability which it elicited, but the principle had been long before recognized by Coke as applicable both to common appendant and appurtenant. In Wilde's case, 8 Coke's Rep., 156 (Coke being at that time chief justice of the common pleas, in which the case was argued), it was held: 1, that common appendant or appurtenant was apportionable; 2, that the commonable land ought not to be subject to any other or greater charge than originally existed; though the court perhaps erred in assuming as matter of fact that there could be no increase if limited to cattle levant and couchant on the original premises, although the land might have been subsequently divided among several owners; 3, that in case of purchase of a part of the commonable land by a tenant claiming a right of common appendant, the right is diminished in proportion to the land purchased; but in the case of common appurtenant, it would be wholly extinguished by such purchase. And it was said in this case that if alienation was not allowed, all common appurtenant in England would be destroyed, for no land continues in so entire a manner, every acre together with another, as it had been *ab initio*, but for preferment of younger sons, advancement of daughters, payment of debts, &c., part has been severed. In Tyrringham's case, 4 Coke, 36, the origin of common appendant is thus stated: "When a lord enfeoffed another of arable land to hold of him in socage (*per servitium socæ*), as every such tenure at the beginning was, the feoffee should have common of the lord's wastes for his cattle which ploughed and manured his land; because it was *tacite* implied in the feoffment, for the feoffee could not plough and manure the land without cattle, and they could not be kept without pasture. The second reason was for the maintenance and advancement of tillage, so that such common appendant is of common right, and it is not necessary to prescribe therein." In case of the purchase, by the proprietor of the commonable lands, of any part of the lands to which common is appendant or appurtenant, the right is wholly extinguished as to the purchased lands, and the same rule if the whole should be purchased. Unity of possession of the lands to which and the lands in which the common belongs is an extinguishment of the right. It has long been settled that the proprietor of lands in which there is a right of common may enclose and improve part, provided he leave a reasonable amount for common.—Common because of vicinage is when the inhabitants of towns contiguous to each other have intercommoned without hindrance on either side. Yet this is merely permissive so far as to excuse what in strictness is a trespass; but no length of time, according to the opinion of Blackstone, will establish a prescription, but either town may bar out the other.—Common in gross is not attached to lands at all, but merely to the person. This right is not, however, multipled according to the number of a man's heirs. By the English law, if the right descend to several, as in the case of coparceners (*i. e.*, where the descent is to daughters), the eldest shall take, but be liable to contribution. In the United States a different rule is held, viz.: that all the heirs must jointly possess or convey.—The right of common has been comparatively less important in this country than in England; but the principles of the common law have been, with few exceptions, recognized here. It would probably not be admitted in any of the states, not even in those newest settled, that the grant of a piece of land parcel of a larger tract held by the grantor would carry with it common of pasturage or fuel. It can arise only by express grant or by prescription, which, as before mentioned, is always founded upon a supposed grant. The common of estovers, or the right to take wood for fuel, or for other use of the house or farm of the party entitled on the land of another, is held in New York not to be apportionable; so that if partition is made of the premises among several, without reserving the right of common to one, it is gone entirely.—Other somewhat analogous privileges are sometimes spoken of as rights of common; as where the inhabitants of a town or village are permitted to pasture their beasts upon lands owned by the municipality, or in the public highways.

COMMON CARRIER, one who undertakes for compensation to carry goods from place to place for all who see fit to employ him. Of this class are proprietors of stage coaches, owners of vessels, railroad and express companies, and also wagoners and others, who,

either on particular routes or as they may be directed, hold themselves out as carriers for the public indifferently. Persons who thus become general carriers assume peculiar obligations, and are subjected by the law to responsibilities from which mere private carriers, or those who only undertake to carry on particular occasions or for certain persons, are exempt. A common carrier is considered as in a public employment, and he is bound to carry without discrimination for all who may offer to employ him, and is liable for a refusal so to do. His business may be the transportation of all kinds of movable property, or it may be restricted to particular kinds or descriptions; or he may carry movables generally, but exclude particular articles the carriage of which would be peculiarly inconvenient or extra-hazardous to persons or property carried, such for instance as nitro-glycerine; and where the business is thus restricted, the public cannot insist upon an obligation to carry beyond what has been voluntarily assumed. (23 Vermont Rep., 186.) The liability of the carrier is to carry safely, and to deliver within a reasonable time; and he is said in general terms to be an insurer against all loss or damage to the property carried, except such as may occur by the act of God or of the public enemy. A loss by lightning, tempest, the perils of the sea, or any inevitable accident which human care and foresight would not have guarded against, he is not responsible for; but he must respond to the owner for fires occurring by negligence, whether of himself or his servants, or of third persons; for injuries through defects of machinery and vehicles; for losses by collisions, thefts, embezzlements; and for those occurring in consequence of unreasonable delay in carriage or delivery. If, however, he be plundered by the public enemy without his fault, or robbed by pirates, he is excused. But in any case where the carrier relies upon matter of excuse, he will nevertheless be held responsible if his own act or default concurred in producing the injury. (12 Maryland Rep., 9; 30 New York Rep., 630; 41 Penn. State Rep., 378.) A carrier may contract with his employer for a limitation of his common-law liability (6 Howard, 344), and this is very often done by provisions inserted in the bill of lading or other corresponding instrument; but he cannot impose restrictions by his own act merely, and it has accordingly been held that notices posted at his office or other place of business that he would not be responsible beyond a specified amount, or for losses caused by particular perils, were of no force unless it could be shown that they were brought home to the knowledge of the consignor, and that he assented thereto. (19 Wendell, 234, 251.) Notices, however, prescribing reasonable regulations for the conduct of the business, are not regarded as limitations of liability, and the consignor must conform to them, as he must also to the general regulations established by custom, and which, being generally understood, are supposed to be known by every one having transactions which would come within them. A common regulation is one requiring the nature or value of the property offered for carriage to be stated, and limiting the liability of the carrier to the value actually stated, where untruthful information has been given. It is a disputed point how far a common carrier may contract for exemption from responsibility for losses caused by his own negligence. In some cases it has been held that certain new kinds of business from their very nature imposed certain restrictions; as, for instance, the transportation of live cattle, which are always understood to be accompanied by the owner or his servant, whose charge and supervision are inconsistent with the unlimited liability of the carrier as insurer, and must be understood to modify it accordingly. (21 Michigan Rep., 165.) Limitations upon the carrier's liability are sometimes imposed by statute; as in the case of the act of congress of March 3, 1851, which exempts the masters and owners of vessels from liability for losses by fires happening without their design or neglect, and for the loss of certain valuable articles not made known to them and entered truly in the bill of lading.—The character of delivery to be made by the carrier will depend upon the nature and usages of the business and modes of conveyance. A wagon will be expected to deliver at the consignee's place of business; but in the case of goods transported by railroad, the consignee is expected to receive them at the warehouse of the railroad company, unless the company adds to its ordinary business that of draymen also. By some courts it is held that the responsibility of a railroad company as common carriers ceases as soon as the goods are received at the point of destination and placed in their warehouse; while others hold that it continues until the consignee has been notified of the receipt of the goods, and has had reasonable time to take them away; after which time, if they remain in warehouse, the company is no longer insurer, but liable like other warehousemen for negligence. A carrier is entitled of right to demand payment of his charges in advance; but if he does not do so, he has a lien therefor on the goods carried, and also for any advances which may have been made by him in payment of the charges of other carriers over whose lines the goods have come to him. In England, where a railroad company receives goods to be carried over a connecting line and gives receipt accordingly, it is held liable as carrier to the point of ultimate destination (8 Meeson and Welsby, 421); but this doctrine is rejected in America, and it is held liable to the extent of its own route only and for safe and prompt delivery to the next carrier, unless by contract, express or implied, it has assumed a further liability. (6 Hill, 157; 18 Vermont Rep., 140; 22 Conn. Rep., 1.) The responsibility of the carrier begins as soon as the goods

are delivered to him for carriage, unless they are retained for the convenience of the owner, or awaiting his orders.—Common carriers of persons are those who hold themselves out as carriers for hire of such as may offer, and who thereby become bound to carry all who offer. Their undertaking is to furnish suitable vehicles and to carry with reasonable despatch and without negligence. They are not, however, insurers for the safety of their passengers, but are held to the highest degree of care and vigilance, and must supply themselves with the most approved appliances for the conduct of their business. An injury through defect of machinery renders the carrier liable, unless the defect was one which no degree of watchfulness on his part would enable him to detect and guard against. The negligence of the carrier's agent or servant is his own negligence; but he is not liable for the servant's intentional wrongs, except where they are perpetrated in the exercise of an authority which the carrier has conferred, and on his behalf; as, for example, when a railroad conductor thrusts a passenger from the cars to his injury on a wrongful charge of non-payment of fare. (See MASTER AND SERVANT.) Where, however, the injury occurs through the concurring negligence of the carrier and the passenger, the former is not liable, as the law will not undertake to apportion the responsibility in such cases. But if the want of prudent conduct on the part of the passenger is in consequence of fright or alarm caused by the carrier's negligence, he cannot excuse himself on that ground. The common law does not make a carrier liable civilly for a death caused by his negligence; but this has been regarded as a serious defect, and now by Lord Campbell's act (9 and 10 Victoria, ch. 93), and by statutes in the United States, all persons by whose wrongful act, neglect, or default a death is caused, are made liable to the payment of a pecuniary compensation for the benefit of the family or next of kin. An injury to a passenger while he is on the carrier's vehicle in the proper place for carriage is *prima facie* through the carrier's negligence. The carrier may, however, establish reasonable rules and regulations for the management of his business, which passengers must observe at their peril, and may eject from his conveyance any who refuse to comply; and the reasonableness of such rules and regulations is a mixed question of law and fact, except where they are so palpably improper as to be void on their face. Every passenger has a right to take with him reasonable baggage and money for his journey, and for these the carrier is liable as insurer to the same extent as any carrier of goods. What is baggage and what a reasonable amount will depend upon the nature and extent of the journey, and upon the passenger's condition and circumstances in life. Such articles of clothing and personal convenience as are usually taken on going abroad, a watch and common articles of personal ornament, would be included, but not articles taken in connection with the passenger's business, or money beyond what might in prudence be provided for the contingencies of the journey. If, however, the carrier is accustomed to take with his passengers other goods besides their baggage, for a compensation to be paid him, he assumes as to such goods all the responsibilities of a common carrier of goods, and consequently may be liable for a loss thereof, though occasioned by such circumstances as would excuse him from liability to the passenger for a personal injury. The carrier may always demand his compensation in advance; but if he fails to do so, the non-payment prior to an injury will not excuse him from liability.

COMMON LAW. By this term in English jurisprudence is sometimes designated that part of the law of England which has grown up from usage, as distinguished from acts of parliament; the former being also classified as *leges non scriptæ*, the latter as *leges scriptæ*. This last classification is, however, far from accurate; for, as we shall have occasion to show more particularly in another part of this article, the laws were at an early period repeatedly collected and promulgated by royal authority, and in later times have been contained in reported decisions of the courts and treatises of writers upon law; and again, many ancient statutes, the records of which are now lost, were incorporated into the common law, many others of which we have the record being merely declaratory of the common law as it was claimed to have existed before. Such was the *Magna Charta*, as confirmed by parliament, 9 Henry III., the oldest of the statutes of which an original record is now extant; so the statute 25 Edward III., relating to treason, the petition of right, which was passed in 1628, and various other statutes of more modern date, purporting merely to declare the existing law, and not to enact any new provision. The definition of common law above given includes not merely the indigenous customs of the English people, but also so much of the Roman and canon laws as have been introduced in the admiralty and ecclesiastical courts, as well as the rules or maxims which were borrowed by English judges and writers from either of those systems. The term is also sometimes used to express the whole law, statutory or customary, as administered in the most ancient or what was termed common law courts, in distinction from the system of equity as developed in the court of chancery, the latter being of more recent growth, and intended for relief in cases where there was no adequate remedy by the strict rules of the common law. In a still larger sense, it is the common appellation of the entire English law, including even the foreign elements intermingled with it, in distinction from the civil law generally received among European nations, and from the canon law, except so far as adopted in the

ecclesiastical courts of England. It is in the last sense that it is commonly understood in the United States, yet with some modifications, growing out of its limited application under our peculiar political organization. In all the states except Louisiana the common law has been received, but this has been understood not to include statutes, except so far as they had by their antiquity become merged in the common law, or had been recognized by colonial legislation or by general usage. The general course has been to reënact the English statutes which it was deemed important to retain. In some of the states, however, many of the statutes have been admitted as having acquired legal validity without such reënactment. The ecclesiastical administration of law is also excluded, but this has been chiefly by a statutory establishment of courts in which the ecclesiastical has been united with civil jurisdiction. The principles of the canon law, with that exception, have remained in force in this country so far as they had become part of the common law.—In the exposition of the subject it will be proper to consider it in a twofold aspect, viz.: the development of the common law from its primary sources, and the peculiar principles by which it is distinguishable from other systems of law. The first branch of our inquiry is deeply interesting, as containing the true history of the English people, and thus illustrating the chief element of our own nationality. No other modern European nation has produced for itself an entire system of law. The Roman is the basis of all continental jurisprudence, and in some countries, as Italy and some of the German states, is still in full force as an original authority, modified only by political changes and local usages, which, however, have a similar relation and as limited a proportion to the original as the statutory has to the common law in England. In other countries, as Spain, it has been digested in common with the modern additions, but this does not supersede a reference to the original source for the resolution of any difficult questions; and lastly, in other countries, as France, Prussia, and Austria, it has been reconstructed into the form of a code, though it still furnishes the elementary principles, legal language, modes of reasoning, and in general the forms of proceedings of all these compilations. On the other hand, whatever foreign element may have been intermingled with the English law has been assimilated by a process that may be compared to chylification in the animal system. The primitive constituent of this law may be safely assumed to be the Saxon. Nothing can be traced from the Britons, either of local usages or of the Roman law as administered while they were subject to the imperial government. Whatever has been derived from the latter source was introduced long afterward, and chiefly through the Normans. The very language which we may suppose to have been spoken by the common people when Britain was a Roman province was lost, or is to be traced only in Wales and Brittany. Sir John Fortescue, who wrote in the reign of Henry VI., in his zeal to magnify the common above the civil law, maintained that the former was the more ancient, for that the customs upon which it was founded had existed from the earliest period, without interruption by the Roman, Saxon, Danish, and Norman conquests; and Selden, in his notes upon Fortescue, does not dispute the assertion, further than that he says customs were also introduced by the Saxons, Danes, &c. Coke also asserts that the common laws of England were of greater antiquity than any other human laws (Pref. 2d Reports), and quotes the opinion of Fortescue at full length (Pref. 6th Rep.). This extravagant hypothesis is worthy of mention only as an illustration of the singular partiality of the English mind for whatever was of native origin, and the prejudice existing at every period against whatever was of foreign growth. In estimating the proportion that Saxon usages contributed in the formation of English law, it would be too limited a view if we should take into account only the records now extant of particular laws and forms of proceedings. These records are imperfect, and even if we had the entire body of laws so far as they were ever reduced to writing, it would furnish but a part of what then existed and was perpetuated, and again it would be leaving out the self-developing power inherent in the habits of the people. The nation continued to be essentially Saxon even after the Norman conquest. The tenure of real estate was indeed radically changed by the introduction of the feudal laws, yet with steady perseverance the middle class gradually obtained amelioration of that system, and ingrafted upon it many peculiar rules and forms congenial with the national character. So the Norman sovereigns undertook to revolutionize the whole judicial administration. The *aula regis*, consisting of the king and council, sought to convoke to itself the judicial business, which had before been chiefly transacted in the Saxon county courts, presided over by a sheriff and bishop. The Norman language was introduced as the law language at least of the *aula regis*, and of the superior courts into which that tribunal was subsequently resolved, and Norman lawyers and judges sought to introduce the forms of practice and even rules of decision to which they had been accustomed. Yet in spite of these disadvantages, Saxon customs still maintained their hold of the people. Terms were invented in Norman phraseology to express many of the judicial proceedings. The pleadings were indeed in Latin, but trials were conducted and decisions reported in the Norman. But underlying these exterior forms can be seen the same principles of right which constitute the earlier law of the country, and the administration of justice was still in fact practically in accordance with Saxon

usages. This may be attributed in a considerable degree to the large amount of business which continued to be transacted in the county courts, where the Saxon language and usages were strictly adhered to. The appointment of itinerant justices to go into the several counties of the kingdom for the trial of civil and criminal causes, which became a fixed custom in the reign of Henry II., must have also contributed largely to the perpetuation of provincial forms. Hence it may be justly said that the laws continued to be formed as new cases arose, by the same habit of mind after the conquest as before, and that the common law continued to be developed from the Saxon original even under the Norman sovereigns. Of the collections of Saxon laws there are mentioned: 1. The *Dom Bok* or *Liber Judicialis* of Alfred the Great, which was designed as a code for the government of the whole kingdom, and is supposed to have consisted of the local customs of different parts of the country, viz.: *a*, the Mercian laws, which prevailed in the counties bordering on Wales, and which may have retained some of the old British customs; *b*, the West Saxon, which appertained to the southern and southwestern counties; *c*, the Danish, which had been introduced on the eastern coast, where the Danes had settled. It appears that some laws were taken from the Old Testament, and it is likely that Alfred may have taken some liberty with existing regulations, particularly with the penal laws, as by a new enactment making murder a capital offence. But whatever was not in accordance with the spirit of the people came very little into use, and the whole was much interfered with by wars and consequent civil disorders. It has been said by some writers (Blackstone and others) that this code was extant as late as the reign of Edward IV., but it is now lost. Hallam, however, questions the authenticity of the work referred to. 2. The compilation of Edward the Confessor, the basis of which was the previous code of Alfred, and was intended to be a complete collection of laws both customary and statute. This obtained great celebrity, being the system which was in force immediately prior to the conquest, and consequently identified by the Saxons with their nationality. When therefore they often demanded of the Norman kings confirmation of the laws of the confessor, they meant only the guarantee of the laws by which they had been formerly governed. This compilation is also lost. In some old writers there is a reference to a compilation begun by King Edgar, grandfather of the confessor, but this is supposed to be the same that was afterward completed by the latter. 3. A collection of ancient Saxon laws, canons, decrees of councils, and other public acts, was made by Lambard in the reign of Elizabeth, under the title of *Αρχαιονόμια, sive de Priscis Anglorum Legibus.* These laws are in Anglo-Saxon, and among them are some of Ethelbert, king of Kent (about 560). To this collection additions have been since made by Dr. Wilkins.—The extent of the change of the laws made by the Normans has been the subject of much debate. It was chiefly in the tenure of real estate and the incidents resulting therefrom. On the one hand, it has been maintained by Coke, Selden, and others, that the feudal tenure existed among the Saxons before the conquest, but by Hale, and especially by Sir Martin Wright, that it was first introduced by the Normans. Without entering upon that discussion, it will be sufficient here to say that principles relating to real estate are apparent soon after the conquest, radically differing from those recognized by the Saxons before that time. Among these may be specified, that landed property according to the Saxon laws was hereditary, that, with some exceptions, it descended to all the sons, and that it could be aliened, mortgaged, or devised at the pleasure of the owner; whereas, not long after the accession of the Norman sovereigns, we find the descent of lands to the heir depending, at least in theory, upon the consent of the superior lord, as shown by the exaction of a compensation, called a relief, which the heir was compelled to pay; that the land descended to the eldest son, in exclusion of the others, and during the infancy of the heir the seignior or lord had the custody of his person and the care of his estate; the land could not be aliened nor mortgaged, nor devised without the consent of the lord, nor sold under judgment for the payment of debts. Some of these restraints were relaxed in no long period afterward, as by a law of Henry I., which allowed a man to alien lands he had himself acquired, and which had not come to him by descent; this was modified in the reign of Henry II. by allowing alienation of purchased lands if he had other lands by descent sufficient to provide for his children, and if he had not, then he could only alien a part. So likewise in the reign of Henry II. alienation of a part of the inheritance was allowed upon the same conditions. But disposal of lands by devise was never allowed until the reign of Henry VIII., when the statute relating to wills was passed. In the system of judicature, among other changes was one which at the time was perhaps not designed to affect the mode of administering the laws, but which became the occasion of a vast extension of the jurisdiction of ecclesiastical courts and the bringing in of a foreign canonical law. This was an ordinance of William the Conqueror, by which the bishop, who had formerly sat in the county courts with the sheriff (the two together disposing of all causes, civil and ecclesiastical), was directed to hold a separate court for the trial of ecclesiastical cases. The bishops, being thus made independent of the secular courts, proceeded to appropriate to their separate jurisdiction a large number of cases, under pretence of their

involving something of a spiritual nature, as tithes and benefices. So they claimed exclusive cognizance of all questions relating to marriage, on the ground that it was a spiritual contract, and this claim involved not merely the power of annulling marriages and granting divorces, but also of determining questions of legitimacy and bastardy. The probate of testaments, it appears, had previously belonged to them, and this carried with it the cognizance of legacies. Thus, for a considerable time, any questions relating to either, when incidentally involved in a civil court, were referred to the ecclesiastical court for an answer to the particular question, when the civil court proceeded with the determination of the case. Jurisdiction of the estates (that is to say, the personal effects) of persons dying intestate was obtained under a custom which is spoken of in a law of Henry I., that such effects were to be disposed of *pro anima sua*. This custom must have grown up after the conquest, for by the Saxon laws both real and personal estate descended in the same manner in case of intestacy. What would be most for the benefit of the soul of the intestate, it was maintained, the bishops were most competent to decide. In King John's charter (the original Magna Charta) it was expressly provided that the chattels of an intestate should be disposed of by the next of kin *per visum ecclesiæ*. This clause, though it is said to have been also contained in the charter of Henry III., was left out in the exemplification on the roll, 25 Edward I., from which the Magna Charta was copied in the statute books. Under this it became an admitted right of the ecclesiastical courts to issue letters of administration in cases of intestacy. The law to which ecclesiastical courts had been formerly subject had been first established by a national synod held in 670, and was called the *codex canonum vetus ecclesiæ Romanæ*. Various laws were passed after that time for the regulation of ecclesiastical matters, all of which, together with the original code, were reviewed by William the Conqueror with the assent of his great council. There was, therefore, a national canon law which had been prescribed or sanctioned by the legislature, and which did not depend upon pontifical authority. Under the new constitution of ecclesiastical courts, the clergy now, however, sought to introduce the entire canon law as promulgated at Rome. A compilation by Ivo de Chartres, in the reign of Henry I., contained many innovations upon the ancient law; but after the digest of the whole pontifical canon law by Gratian had been adopted at Rome, it became a favorite object with the English clergy to procure its recognition as the basis of their ecclesiastical law. As this compilation was derived chiefly from the Roman or civil law, the latter was also regarded with much favor by ecclesiastics, and they introduced public instruction at Oxford upon both the canon and civil law. Such, however, was the national jealousy, that in 1152 the king prohibited the reading of books of canon law, referring, it may be presumed, to the two compilations by Ivo de Chartres and Gratian. The doctrines of this foreign canon law being in many respects subversive of the authority previously exercised by the civil government over the ecclesiastical courts, a struggle took place in which the whole pontifical power was brought to bear in their favor. The constitutions of Clarendon, which were enacted by Henry II. with the assent of the great council, in 1164, and confirmed at a council held at Northampton in 1176, were intended as a final settlement of the disputed points. By these it was determined that questions concerning benefices (that is to say, the right of presentation) should be tried by the king's secular courts; that ecclesiastics should be bound to come into the king's courts to answer to any matters cognizable there; that there should be no appeal from the archbishop's court except to the king in person; questions in relation to benefices, when the matter involved was whether the benefice were lay or eleemosynary, were to be determined in the king's court by a recognition of 12 men (a jury); lastly, the ecclesiastical courts were excluded from jurisdiction of pleas of debt, which they had lately assumed upon pretence that they were due *fide interposita*. In consequence of the king's remorse for the murder of Becket, these constitutions were not strictly executed during the rest of his reign, but they were not repealed.—It would exceed our limits to trace further the history of the ecclesiastical laws of England. It will be sufficient to say that by various legatine and provincial constitutions, the former being enacted by national synods, the latter by provincial synods, held either by the archbishop of Canterbury or of York, the canon law has been settled with sole reference to the exigencies of the church and kingdom of England, and its authority now rests upon a statute of Henry VIII., by which it was declared that all canons, constitutions, &c., then existing, and which were not repugnant to the law of the land or the king's prerogative, should remain in use. An incidental effect of the enlargement of ecclesiastical jurisdiction was that the civil law was referred to for the decision of many questions, and the rules thus adopted were of course recognized by other courts; but in addition to this, the law of England relating to personal property, which was comparatively deficient, received a large accession from the civil law, with which the judges had now become somewhat acquainted. The rules of consanguinity and therefore of descent, except the law of primogeniture, were taken wholly from the canon law, which in this particular differed from the civil. And even as to primogeniture, there was for a time an alternation between the feudal principle, which gave to the eldest son the entire inheritance, and the

Jewish or canonical rule, which allowed a double portion to the eldest, but gave to the others also a share of the estate. Thus in the reign of Henry I. it appears that the eldest son took only the *primum patris fœdum* (the principal manor), the rest being left to descend to the other sons; but this rule was of short duration, for in the reign of Henry II. the eldest son was considered the sole heir of the whole inheritance. This related to lands held by military tenure or knight's service; socage lands (which were held by other services, and finally for a mere pecuniary compensation), even as late as the reign of Henry II., descended to all the sons, but the eldest was entitled to the capital messuage. This was not, however, universal. The doctrine of representation was not entirely settled, and Glanville (who wrote in that reign) says that it was a question, when a man left a younger son, and a grandson by an elder son, which should succeed; and he expresses the opinion that if the elder son had been provided for by an appointment of land during his life, the grandson should have no claim against the uncle for the remainder, though perhaps the eldest son might himself have done so had he survived. Gradually, however, all lands became subject to the strict feudal rule of primogeniture, except in certain places, where, by special custom which had been unbroken, it was otherwise.—As to personal property and contracts, how extensively the rules of the civil law were adopted may be seen in the treatise of Bracton, *De Legibus et Consuetudinibus Angliæ*, which was published in the reign of Henry III. The arrangement of the subject is similar to that of Justinian's Institutes, and many principles are extracted from the Pandects, sometimes in the very language of the original. But Bracton was no servile copyist. He had a great legal mind, and he selected and applied the rules of law, from whatever sources derived, with much discrimination, and defined and explained them with precision. Such was his adaptation of legal principles to the peculiar circumstances and habits of the English people, that it was not understood by his contemporaries how largely he had drawn upon the civil law. During a long period, down even to the time of Coke, he held much the same relation to the common law that in later times Pothier had to the French law, with only this difference, that Bracton was also profoundly versed in the practice of the courts and forms of proceeding.—As our object is simply to develop the primitive sources of the common law, and the general principle or process of its formation, it will be unnecessary to trace minutely the successive changes, from its earlier form to the later and more complicated system. It will be sufficient to refer summarily to some of the important incidents. 1. The relaxation of the feudal principle of nonalienation, until all restriction was removed by the statute *Quia emptores*, 18 Edward I., and other acts; then the introduction of conditional fees, or estates tail, which, by the statute *De Donis*, 13 Edward I., were restricted from alienation, and the evasion of the statute by new forms of conveyance, viz., fines and common recoveries. 2. The prohibition of conveyances to religious houses and persons. This was first by the Magna Charta of Henry III., which was construed to relate to religious houses only; and in consequence the act *De Religiosis*, 7 Edward I., commonly called the statute of mortmain, was passed, by which the prohibition was extended to all persons holding for similar purposes; and in the statute *Quia emptores*, above referred to, which gave general liberty of alienating lands, a proviso was inserted that this should not authorize any kind of alienation in mortmain. Common recoveries were resorted to by the ecclesiastics to avoid the effect of these disabling statutes; but this device was checked by statute 13 Edward I., which provided that the fiction should be disregarded, and the real right should be tried, and if not found in the religious corporation, the land should be forfeited. Next the ingenuity of the clergy devised a form of conveyance, by which, instead of the fee, the use only was given to the religious beneficiary, while the seisin remained in a nominal feoffee; and courts of equity, which were then under the direction of the clergy, held that the feoffee was bound in conscience to account to the *cestuy que use* for the profits of the estate. This device was, however, defeated by the act 15 Richard II., which enacted that uses should be subject to the statutes of mortmain as well as the lands. When the statute relating to wills, 32 Henry VIII., was passed, devises to corporations were excluded. By a subsequent act, 43 Elizabeth, a devise to a corporation for a charitable use was allowed, and this is now the sole right which religious corporations have for the acquisition of real estate either by deed or will. 3. The introduction of uses, as before mentioned, gave rise to a complicated part of the English law of real property. Great landed proprietors, for the purpose of perpetuating estates in their families, and to prevent alienation, resorted to the expedient which had been invented by the clergy, of conveying the use instead of the fee, and in the court of chancery such conveyance was held binding for any length of time. This gave rise to the statute of uses, 27 Henry VIII., by which the use was transferred into possession, or in other words, the estate vested in the *cestuy que use*. By a narrow construction of the act, its operation was to a great extent evaded by the substitution of trusts for uses, and under that denomination conveyances have been introduced which are enforced in chancery, but with some important modifications in regard to their legal effect. (See BARGAIN AND SALE.) 4. The various provisions of law in relation to personal liberty and rights. This is perhaps the most important part of the common law, but it would greatly exceed our limits to attempt to give even a summary of its

history. A multitude of statutes were passed, at various periods, declaratory of the common law, or in aid of what was claimed as constitutional rights, the most important of which were the Magna Charta of King John, confirmed by Henry III.; the petition of right, passed in the reign of Charles I.; the *habeas corpus* act, in that of Charles II.; the bill of rights, in that of William and Mary; and the act of settlement under William III.—Three subjects remain to be considered, viz.: chancery, admiralty, and the modern commercial law. As to the equity law as administered in the court of chancery, see CHANCERY. The courts of admiralty have jurisdiction of maritime causes, which were considered to be out of the reach of the ordinary courts of justice. It was a peculiarity of the common law that every action was considered local, and was triable in a particular county. Hence causes of action which arose at sea, or in foreign ports, whether upon contracts or for injuries, could have no venue in any county in England. The objection in cases of contracts or injuries in foreign places has been obviated in later times by a fiction which represents the transaction to have taken place in an English county, and the common law courts have taken jurisdiction of that class of cases, with the exception only of what are purely maritime in their nature, which have been left exclusively to the admiralty. The proceedings in these courts are analogous to those of the civil law, yet not directly or entirely derived therefrom. The maritime laws of other countries are referred to, as well in respect to rules of decision as to the mode of proceeding, yet not as binding authority; for the law of England recognizes no foreign law as such. Common usage limited by divers acts of parliament has, however, admitted to a certain extent the principles contained in maritime codes, especially the Rhodian laws and laws of Oléron. The modern English commercial law has grown up chiefly within the last 200 years, and has attained its present complete state by the mere development of principles recognized by the common law. It is a memorable instance of the expansive power of law from natural resources. Statutes have had but little to do with it. The civil law, and the modern codes or systems founded thereon, have been no otherwise availed of by English judges than to aid their own reasoning. Lord Mansfield and other eminent judges were familiar with foreign jurisprudence, but they were able to decide commercial questions by a process of reasoning entirely congenial with the common law.—The second inquiry which was proposed at the beginning of this article was a summary of the peculiar principles by which the common law is distinguishable from other systems of law. 1. Security for life, liberty, and property. We have already referred to the declaratory statutes by which personal rights are guaranteed. But it would be a mistake to suppose that these statutory provisions have constituted the real defence of English liberty. They are in fact but the expression of the stern, indomitable spirit of independence which has been the honorable distinction of the national character, and without which no charter or statutes could have availed anything against arbitrary power. The statutes themselves at an early period were in fact too general in their terms to have furnished any sure protection against corrupt judicial construction by subservient courts, had it not been for the constantly renewed exhibition of persistent public feeling which could not be safely trifled with. The famous clause in the Magna Charta, which has been often called the foundation of civil freedom in England, was in these words: *Nullus liber homo capiatur vel imprisonetur, aut disseisiatur de libero tenemento suo, vel libertatibus vel liberis consuetudinibus suis, aut utlagetur aut exulet, aut aliquo modo destruatur, nec super eum ibimus nec super eum mittemus, nisi per legale judicium parium suorum vel per legem terræ. Nulli vendemus, nulli negabimus, aut differemus rectum vel justitiam.* (No free man shall be arrested, or imprisoned, or disseised of his freehold, or disfranchised of his liberties or customary rights, nor be outlawed or expelled from the country, or in any other manner destroyed, except by the judgment of his peers or by the law of the land. We will sell justice to no one, nor deny it to any, nor delay its due administration.) These are energetic expressions, yet of what avail would they have been against a tyrannical Henry VIII., who would have held, as he did in some instances, that his own will was the law of the land, or a faithless Charles I., who could assent to the petition of right and evade its effect by falsifying the record, if the liberties of the commoners had depended upon a mere charter? Some of the later statutes are more specific in their provisions. The petition of right required the cause of arrest to be specified in the warrant under which any man was imprisoned. The *habeas corpus* act further provided for a determination of the sufficiency of the cause of arrest, and a discharge if such arrest should be found to be illegal. Other acts provided against the exaction of bail for an excessive amount, in cases where the arrest was lawful. It is to be remembered that all these and many similar statutes purported only to guard against encroachments upon rights claimed to exist by common law. It has always been customary in the United States to incorporate in the constitutions of the several states, or to declare by statutes, some of the most important of the personal rights which have been the subject of controversy in England. There is, however, but little occasion for such reënactment. The privileges thus declared are inherent in the very structure of our society, and recognized by our common legislation. Our danger does not lie in that direction, but rather in too unchecked license. The Athenian state would, perhaps, furnish us a more apt precedent of

the evils to which we are exposed, and the appropriate counteraction. 2. Trial by jury has been the most noticed of common law rights, because it belongs exclusively to the English, having been admitted in no other country until within a very recent period. It has been attended with doubtful success in France and some other states where the French code has been introduced either as law or precedent. Sir John Fortescue insisted that this mode of trial had not been introduced in other countries because a class of men could not be found there fitted to serve on juries. "For though there be in them men of great power and of great riches and possessions, yet they dwell not nigh one to another, as such great men do in England; neither so many inheritors and possessors of land are elsewhere as in England." (Fortes. *De Laud. Ang.*, c. 29.) The meaning of this is, that in his time there was no middle class of men between the nobility and the impoverished peasantry; and it was undoubtedly true that no country in Europe then had a common people as well provided and intelligent as the English. But although at the present time there may not be the same difference that then there was, between England and other countries, in the comforts of the commonalty, yet it is equally true in our time that there is a comparative deficiency of qualification still existing in continental countries for that office. It requires a training for many successive generations to fit men for judicial functions; it requires above all an individual independence, which has been peculiarly the characteristic of the English people. Possession of a competence is also important. It is related by the old writers that during a considerable period after the conquest, when the common people were oppressed and impoverished, it was difficult to maintain the Saxon administration of justice in the county courts, by reason of the lapsed integrity of the freeholders, who were usually assembled in those courts as jurymen. This led to a proceeding called an attaint, by which a jury was put upon trial for a false verdict, and a severe penalty followed conviction. The English character afterward improved, however, and the trial by jury has always been maintained in a great degree of purity. 3. The mode of proof in trials. The English law of evidence is an extensive branch of the law, and has been founded upon good sense. In criminal cases, the accused parties are not compelled to testify against themselves; and although, upon preliminary examination before magistrates, the accused is permitted to make his statement, he is not compelled to do so. Much less was it ever permitted in England, except for a short period under the Tudors and the first Stuart, to put a man to torture to extort his confession. This is mentioned by Fortescue as one superiority of the English laws, from which it may be inferred that the practice did not then exist, though the introduction of the rack is referred by Coke to the duke of Exeter, in the reign of Henry VI. It was not used in England after the reign of James I. 4. The rules of the common law relative to husband and wife cannot challenge the merit of superiority to the corresponding law in other countries. The personal property of the wife became the husband's so far as he could get possession; and it was with extreme difficulty, and only by the aid of the court of chancery, that she could formerly be protected in the enjoyment of any part of her property. The law has within a recent period, and especially in the United States, been ameliorated in favor of the wife, but this change has been by statute and not by any self-amelioration of the common law. Marriage can be dissolved only for one offence committed after the marriage, viz., adultery. For some preëxisting causes, as impotence, fraud, &c., the contract may be declared null; but no subsequent cause but the one above mentioned is a ground of divorce. Under the same head we may mention the steady persistence in the ancient doctrine that a child born before the marriage is illegitimate. There has always been a special prejudice against any change of the law in this respect, perhaps at an early period, owing to the general opposition to the canon law. *Nolumus leges Angliæ mutari quæ hucusque usitatæ sunt et approbatæ*, said the barons when it was proposed in the reign of Henry III. to legitimate children born before marriage. Fortescue praises the good sense of the rule of the common law, and Blackstone maintains the same view. It is enough for our present purpose to say that in that respect it differs from the laws of most other countries. 5. The English law of descent, including primogeniture, is another peculiarity which has been already sufficiently noticed. 6. Passing over many other points of lesser consideration, the last and principal circumstance distinguishing the common law is the mode in which it has been promulgated. This has been by the decisions of courts. Treatises of writers have no authority, except as sustained by decisions. It was thought as early as the time of Bacon that the decisions had become so numerous that they needed to be digested, and digests were in fact prepared, though not by public authority. Still the cases have gone on accumulating; abridgments and digests have followed; the older books are no longer cited, but the rules and reasons have been reproduced in other forms. The law seems to be still in growth, while the richness of our legal learning is the detritus from ancient tributaries, the sources of which we can no longer trace with distinctness.

COMMON PRAYER, Book of, the formulary of public worship of churches of the Anglican communion. The early British church appears to have adopted, many years previous to the departure of the Romans from Britain, a liturgy almost identical with that of the Gallican churches, and which, like the latter, was

derived from the Ephesine liturgy of St. John. To this the remnant of native Christians in the west and southwest, who had escaped the fury of the Saxon invaders, clung with great tenacity, and Augustin upon his arrival in England in 596, on his mission to convert the Saxons, found it in common use wherever Christian worship was tolerated. Being desirous of establishing the Roman ritual, to which the British bishops strongly objected, he applied for instructions to Pope Gregory the Great, who authorized him to choose either the Gallican or the Roman services, or selections from various forms, as he might find most suitable. The result was a species of amalgamation of liturgies. Different dioceses or districts adopted different modifications of the forms of public worship, in all of which, however, the influence of the early English liturgy was more or less perceptible. After the Norman conquest a vigorous effort was made to secure uniformity in the performance of divine service, and about 1085 Osmond, bishop of Salisbury, compiled the "Sarum Use," or prayer book of the diocese of Salisbury, which eventually became the principal devotional rule of the Anglican church for nearly four centuries and a half. Other local uses, however, prevailed, such as those of Bangor, Hereford, York, and Lincoln; and the Roman system was recognized in most of the monasteries. The service books of the several English uses were in the Latin language; but long before the period of the reformation books of private devotion in the vernacular, called "Prymers," had been introduced, of which three, containing the Lord's prayer, the creed, the ten commandments, and other offices of worship, were put forth between 1535 and 1545. Early in the reign of Henry VIII. amended editions of the Salisbury breviary and missal appeared, and subsequent to 1538 many editions of the Epistles and Gospels in English were published. In 1544 the litany was translated, with the omission of the names of saints which had accumulated in the Latin litanies. These publications were but the preliminary steps toward the introduction of a reformed prayer book. In 1542 a committee of convocation was appointed, with the sanction of Henry VIII., to consider what revision should be made in the existing service books. The committee sat for several years, and during the life of Henry were compelled to act with extreme caution, as the "statute of six articles," passed through his personal influence, made their labors penal. After his death in 1547 their number was enlarged, and, the obnoxious statute having been repealed, they produced at the close of the year "a form of a certain ordinance for the receiving of the body of our Lord in both kinds, viz., of bread and wine," which was ratified by parliament in March, 1548, and was authorized to be used until the whole of the projected service book should be prepared. In the following December they laid before parliament a reformed book of common prayer, which, together with an "act for uniformity of service," was adopted by that body in January, 1549, and came into general use on Whitsunday, June 9. This book, known as the first service book of Edward VI., was the result of six years of diligent labor on the part of the revisers, who endeavored to reduce the different uses prevalent in England to one, the reformed Salisbury use of 1516 and 1541 forming their basis, and to make their work simple and intelligible. They translated into English from the existing service books the prayers, psalms, hymns, epistles, and gospels, omitting what appeared to them to have been derived from other sources than Scripture or primitive practice, and expunging, especially from the communion service, the prayers of invocation to the Virgin Mary and the saints. Where new elements of thought are visible, the sources which supplied them were the reformed breviary of Cardinal Quignones, recommended by Pope Paul III., and especially the "Consultation" of Hermann, archbishop of Cologne, compiled in 1543 with the aid of Bucer and Melanchthon. To the latter formulary the baptismal office was largely indebted, and through it to one of Luther's compilations, made as early as 1523. The new book comprised the order for matins and even song, corresponding with morning prayer and evening prayer in the modernized prayer book, and which were a condensation of the "seven hours of prayer" in the breviary; the introits, collects, epistles, and gospels used at the celebration of the holy communion; the office of the communion; the litany; the rite of baptism; confirmation, which included the catechism; matrimony; the visitation and communion of the sick; the burial of the dead; the purification of women; and a form of service for Ash Wednesday. The psalms appointed to be sung at matins and even song were taken from the "Great English Bible" of Cranmer, and this version is used in the "Book of Common Prayer" to the present day in preference to that contained in the authorized version of the Scriptures. This service book did not require absolute uniformity in outward observances, but allowed the practice in minor details of public worship to be guided by individual tastes and preferences. But a statute passed both houses of parliament in January, 1549, enjoining under the severest penalties that after the feast of Pentecost following, all ministers of the church within the realm of England should be bound to use the form of the said book and no other. In 1550 a "Form for the Ordering of Bishops, Priests, and Deacons" was drawn up, which was subsequently incorporated with the prayer book.—Scarcely had the new book come into use when it encountered opposition from the more radical school of reformers, headed by Hooper, bishop of Gloucester, and several continental Protes-

tants, of whom the most eminent were Peter Martyr, Martin Bucer, and John à Lasco, who had come to England after the accession of Edward VI., and made their way to important posts. Calvin also urged upon the protector Somerset the necessity of pushing the reformation in England further than it had gone. The court yielded to these influences, and the young king declared himself in favor of a more thorough revision of the prayer book. Cranmer, archbishop of Canterbury, one of the framers of the first book, was induced to give his consent to the undertaking, and another committee of divines, who are conjectured to have been the same who prepared the ordinal of 1550, undertook the preparation of a second prayer book, which was duly ratified by parliament, and came into use on All Saints' day, 1552. This is substantially the "Book of Common Prayer" in use at the present day. The difference between this book and that of 1549 consists chiefly in the following particulars: To the offices of matins and even song, which began with the Lord's prayer, were prefixed the sentences, exhortations, confession, and absolution. In the communion service the ten commandments were added, the title of the prayer "for the whole state of Christ's church" was changed to that of a prayer "for the whole state of Christ's church militant here on earth," and the commendation of the departed to divine mercy was omitted. In the prayer of consecration the invocation of the Holy Spirit to sanctify the elements was omitted, and in the administration of the elements a different form of words was used. In the office of baptism the practices of exorcism, anointing, putting on the chrisome, and trine immersion, prescribed in the first book, were abolished in the second. In the burial service the prayers for the dead were changed into thanksgiving, and the service for Ash Wednesday was entitled "A Commination against Sinners." Certain changes were also made in the vestments of the clergy. A few months after this book came into use Edward VI. died, and the first parliament of his successor, Mary, by an act passed in October, 1553, restored the services to the condition in which they were in the last year of Henry VIII. In November, 1558, Elizabeth succeeded to the throne; and early in April, 1559, the second book of Edward VI. was restored to use, with certain slight modifications, prominent among which was the omission of the litany clause, "from the tyranny of the bishop of Rome, and all his detestable enormities." The "ornaments" of the church and the ministers which had been in use under the first book of Edward VI., but had been curtailed by the second, were also restored. The prayer book thus modified, of which a Latin version was also published, was at length acquiesced in by the great body of the English people, and, according to Sir Edward Coke, was even approved by Pope Pius IV., who offered to give it his full sanction "so as her majesty would acknowledge to receive it from the pope, and by his allowance." This statement of Coke's, however, is not accepted as authentic by Catholic authorities. With the exception of a revision of the calendar, no further changes were made in the prayer book until the accession of James I. in 1603. The Puritan or nonconformist party had meanwhile gathered strength, and soon after the arrival of the new sovereign in London they presented to him a petition in favor of a further revision and purification of the liturgy. The result was the so-called Hampton Court conference, participated in by eminent clergy of the established church and of the nonconformist bodies, and which met on Jan. 14, 1604, in presence of the king and the privy council. The king considered the demands of the Puritans untenable, and broke up the conference on the third day; but under the clause of the act of uniformity by which Elizabeth had authorized a revision of the calendar, he directed a few changes to be made in the prayer book, of which the most important seem to have been the questions and answers concerning the sacraments subjoined to the catechism, and the restriction of the administration of baptism to regularly ordained ministers. With the triumph of parliament in the reign of Charles I. the opponents of the prayer book succeeded in 1645 in getting it entirely suppressed, and for fifteen years it passed almost out of sight. The restoration of the royal family brought it again into favor, and subsequent to July, 1660, as Evelyn records, it was publicly used in the churches. In March, 1661, Charles II. summoned a number of divines, representing equally the established church and the nonconformists, to meet in London and review the "liturgy of the church of England, contained in the Book of Common Prayer, and by law established." This assembly, called from its place of meeting the "Savoy conference," was the last official attempt to reconcile the differences of opinion between the advocates and the opponents of the prayer book. Its sessions extended from April 15 to July 24, 1661, and were barren of any practical result. A strong reaction had taken place in favor of the church party, and the nonconformists, though represented by such men as Baxter and Calamy, were not sufficiently united in their plan of opposition to accomplish their object. Baxter even drew up a substitute for the prayer book, which failed to meet the approval of his friends. The work of revision was then committed to the convocations of the provinces of Canterbury and York, by which a number of slight changes were made, which seem to have been in the opposite direction from that desired by the nonconformists. A service was also provided for the baptism of those of riper years, and a form of prayer to be used at sea. The prayer book thus revised, together with an act for uniformity of public worship, was approved by parliament in 1662, and went into immediate use.

A further attempt in the reign of William III. to revise it proved unsuccessful, and the prayer book of 1662 remained unaltered till 1872, when a new lectionary or course of lessons from the Scriptures was introduced, which is made optional till 1879. In the new lectionary many chapters from the Apocrypha are omitted. Previous to 1859 it was customary to include in modern editions of the Book of Common Prayer four services for special days of the year, known as "state services," which, however, properly formed no part of the book. Three of these services, being forms of prayer for the 5th of November, in commemoration of the discovery of the gunpowder plot of 1605; the 30th of January, the anniversary of the execution of Charles I.; and the 29th of May, the birthday of Charles II. and the anniversary of the restoration of the royal family, were in the year above mentioned abolished by act of parliament. The fourth, a form of prayer for the accession of the reigning sovereign, has been retained.—For many years after the reformation no attempt was made to introduce a uniform system of worship in Scotland, although Knox's "Book of Common Order" was very generally used. In deference to the wishes of James I. the general assembly in 1616 decided in favor of a uniform order of liturgy; but nothing was done in the matter till after the accession of Charles I., who was very desirous of having the English prayer book adopted by the church of Scotland. The Scottish bishops, however, preferred to frame a liturgy of their own, and eventually an episcopal committee was appointed to carry this design into execution. The committee after several years' labor, in which they were aided by suggestions from Archbishop Laud, completed their prayer book in 1636, and in 1637 it was imposed upon the church of Scotland by letters patent and the authority of the bishops, without having been submitted to the general assembly. It was modelled after the English prayer book of the time, with a number of slight variations; but the communion office rather followed the form in the first book of Edward VI. The book encountered vehement opposition, and was almost immediately suppressed. From that time until the close of the 18th century the Scottish Episcopal church and its liturgy remained in comparative obscurity, being for many years under the operation of penal laws. The prayer book was several times revised, notably in 1765, and is now in most respects identical with that of the church of England. The communion office, however, retains many features peculiar to the first book of Edward VI.; and certain ancient usages, such as the sign of the cross at confirmation. the mixture of water with wine at the eucharist, and the dismissal previous to the consecration of the elements of those not intending to communicate, are still enjoined by rubric.—Until the disestablishment of the Irish Episcopal church on Jan. 1, 1871, its prayer book was identical with that of the church of England, except that it contained a few additional services, such as a form for the visitation of prisoners, a form of consecration or dedication of churches and chapels, and a prayer for the lord lieutenant. One of the declarations prefixed to the constitution of the disestablished church enjoins the use of the Book of Common Prayer, "subject to such alterations only as may be made therein from time to time by the lawful authority of the church." In the first synod, which met in April, 1871, a number of attempts to alter the liturgy and formularies failed of success, and the subject of revision was referred to the bishops and to a mixed committee of clergy and laymen, who were directed to report in the succeeding year. The synod of 1872 declared the word priest to be synonymous with presbyter, and authorized the shortening of the services on week days and the dividing of them. It also approved of a recommendation for the omission of the rubric on ornaments. Propositions to remove the damnatory clauses from the Athanasian creed, and to allow deacons to pronounce absolution, were defeated, which was declared to be equivalent to a withdrawal of those subjects from further consideration by the synod. The committee was then reappointed and directed to report in 1873.—Previous to the American war of independence members of the church of England in the British North American colonies were under the episcopal supervision of the bishop of London, and used the English Book of Common Prayer. Immediately upon the acknowledgment by Great Britain of the political independence of the United States, measures were taken to establish an American Episcopal church, and to compile a service book for its use. The initiatory step was taken by Connecticut, where in March, 1783, a convention of Episcopal clergy recommended Dr. Samuel Seabury to the English bishops for consecration to the episcopate. Owing to certain technical legal difficulties, this could not at once be effected, and Dr. Seabury went by advice to Scotland, where on Nov. 14, 1784, he was consecrated at Aberdeen by the bishops of the Scottish Episcopal church. Meanwhile a convention, participated in by Episcopalians from various states, had met in New York in October, 1784, and adopted a series of articles, one of which provided "That the said (American) church shall maintain the doctrines of the gospel as now held by the church of England; and shall adhere to the liturgy of the said church, as far as shall be consistent with the American revolution, and the constitutions of the respective states." Pursuant to the recommendations of this body, another convention assembled in Philadelphia in September, 1785, which put forth a volume known as "the proposed book," embodying many important variations from the English Book of Common Prayer. These were of two kinds, political and doctrinal. Under the former head all passages referring to the royal fam-

ily and government of Great Britain were either entirely omitted or adapted to the new political relations of the country, and the so-called "state services" of the English prayer book were stricken out. The chief changes under the second head were the rejection of the Nicene and Athanasian creeds, and the omission of the words "He descended into Hell" from the apostles' creed. The convention of 1785 also recommended to the English church for consecration as bishops Dr. William White of Philadelphia and Dr. Samuel Provoost of New York. But before this act was consummated a copy of the "proposed book" reached England, and elicited from the archbishops of Canterbury and York an expression of disapprobation, not only at various verbal alterations that seemed uncalled for, but at the radical changes made in the three ancient confessions of faith which had always been accepted by the church of England. Whether or not in consequence of this remonstrance, the American Episcopal convention which met at Wilmington, Del., in October, 1786, restored to the prayer book the Nicene creed, allowing it to be used as an alternative instead of the apostles' creed both in the communion and daily offices. The clause "He descended into Hell" was also restored to the apostles' creed, with the rubrical provision that "any churches may omit the words, 'He descended into Hell,' or may instead of them use the words, 'He went into the place of departed spirits,' which are considered as words of the same meaning in the creed." No change, however, was made in the resolution of the convention to discontinue the use of the Athanasian creed in divine service. These concessions having removed the scruples of the English prelates, Drs. White and Provoost were consecrated bishops of Pennsylvania and New York in February, 1787. The general convention which met at Philadelphia in September, 1789, undertook the final revision of the liturgy. A house of bishops was now for the first time organized as a distinct branch of the convention; and although but two of the three members composing it, Bishops Seabury and White, were present, the influence which they exerted prevented any such radical alteration of the prayer book as was desired by a strong party in the house of clerical and lay deputies. The bishops were determined to hold the English prayer book as the basis of their work, and to avoid as far as they could all unnecessary changes; and to their tenacity of purpose and ready coöperation is due the fact that in all their main features the liturgies of the Anglican church in the United States and the mother country are identical. Apart from the changes above noticed, the chief differences between the English and the American Book of Common Prayer, as the latter was settled by this and subsequent conventions, are the following: Many changes of words and phrases have been made with a view to the removal of what was obsolete, or in order to attain greater correctness of expression. In morning prayer and evening prayer the Lord's prayer is directed to be said but once; in both offices the versicles and responses have been abridged; and from evening prayer the *Magnificat* or song of the Virgin and the *Nunc dimittis* have been excluded. The lectionary, or lessons from the Bible, has been in part remodelled, the portions from the Apocrypha being omitted. A "Selection from the Psalms," instead of the portion of the Psalms appointed for the day, is allowed to be used at the discretion of the minister. The *Gloria in excelsis*, found only in the communion service in the English book, is allowed in morning and evening prayer as an alternative with the *Gloria Patri;* and the form of absolution peculiar to the communion service is similarly introduced into morning and evening prayer. The communion service, owing to the influence of Bishop Seabury, was borrowed from the Scottish office, although the order of the English office is generally retained; the distinguishing feature consisting in the incorporation into the prayer of consecration in the American book of the oblation and invocation according to the new Scottish office as revised in 1765. In the baptismal office the minister is permitted to dispense with the sign of the cross after sprinkling the candidate. In the office for the visitation of the sick the rubric directing the minister to advise sick persons to confess their sins, and also the form of absolution, are stricken out. The marriage service is considerably abridged, and the commination service for Ash Wednesday is omitted. From the calendar all names of saints not commemorative of persons and facts of Scripture history have been excluded; and services for the visitation of prisoners, for the consecration of a church or chapel, and for the institution of ministers have been added. Finally, to show their desire to adhere substantially to the English liturgy, the American revisers state in the preface to their Book of Common Prayer that "this (American) church is far from intending to depart from the church of England in any essential point of doctrine, discipline, or worship; or further than local circumstances require." It is customary to include in the English and the American Book of Common Prayer the "Articles of Religion" adopted by the churches of the Anglican communion; also metrical versions of the Psalms and a collection of hymns to be used in divine service. These, however, are not properly a portion of the book, the standard edition of which ends with "The Psalter or Psalms of David." The American prayer book came into general use on Oct. 1, 1790, and in its essential features has remained unchanged to the present day.

COMMON SCHOOLS. Under the general head of Education will be found a condensed history of instruction, public and private, so far as there are data for such a history. Under

the present title will be given only an outline of the development of the great principle of the free elementary education of every child in the community. It would naturally be supposed that in every well regulated state the advantage of the universal education of the community would be so obvious that measures would be taken to effect it almost from the origin of the state. This, however, has been only partially the case. In Sparta under the system of Lycurgus the state undertook the education of the children, but the instruction imparted was mainly physical, and did not reach the peasant classes. In Attica there were public schools for all classes, and this had its influence in making Athens the university city of the ancient world. The education of the children was a religious duty among the Jews, and after the captivity they developed an excellent system of parochial schools in connection with the synagogues. In Rome, while private schools were numerous, their advantages only accrued to the patricians and such plebeians as possessed property; yet after the conquest of Gaul important schools were established in the imperial cities. After the introduction of Christianity and its accession to power, the duty of the authorities to educate the young was speedily recognized by the bishops and clergy. The object of this education was of course their training in the doctrines of Christianity, but it was the recognition of the duty of giving instruction to the masses. In 800 a synod at Mentz ordered that the parochial priests should have schools in the towns and villages, that "the little children of all the faithful should learn letters from them. Let them receive and teach these with the utmost charity, that they themselves may shine as the stars for ever. Let them receive no remuneration from their scholars, unless what the parents through charity may voluntarily offer." A council at Rome in 836 ordained that there should be three kinds of schools throughout Christendom: episcopal, parochial in towns and villages, and others wherever there could be found place and opportunity. The third Lateran council in 1179 ordained the establishment of a grammar school in every cathedral for the gratuitous instruction of the poor. The ordinance was enlarged and enforced by the council of Lyons in 1245. This idea of popular education has been carried out by the zealous efforts of the Jesuits and other religious orders. While in the large towns and cities considerable numbers of the poor thus received the rudiments of knowledge, in the more scattered population of the rural districts very few could read or write. At the era of the reformation the cause of popular schools received a further impulse. In 1524 Luther wrote an "address to the common councils of all the cities of Germany, in behalf of Christian schools;" and in 1526 he wrote to the elector of Saxony strongly urging the application of the monastic funds to the support of schools for the poor. In 1528, with the aid of Melanchthon, he drew up the Saxon school system, as it was called, and through life the education of the young of all classes in free schools was one of the objects nearest his heart. The labors of Luther in this field were continued by his followers, and the Germans seemed destined to become the best educated people in Europe; but the breaking out of the thirty years' war in 1618 arrested the progress of all educational improvements. About the middle of the 17th century several of the German states passed laws making it compulsory on parents to send their children to school during a certain age. In the latter part of that century two men appeared whose labors introduced a new era into the history of education in Germany. They were Philip Spener and August Francke. The latter gave an impulse to the cause of popular education which, through the influence of his disciples and followers, such as Zinzendorf, Steinmetz, Hecker, Basedow, Campe, Salzmann, and Pestalozzi, has been continued to our own times. In Prussia the movement in behalf of a thoroughly popular system of education, though more fully sustained than in any other country on the continent, did not commence till the early part of the present century. Enactments rendering the attendance of the children at the schools compulsory had been upon the statute book since 1717, but it was not till 1809 that the habits and good will of the people were enlisted on the side of education. The Prussian schools are by law as accessible to the poorest as to the richest, and every provision is made for adapting them fully to the wants of the people and the government. Scotland is the only other country of Europe which had at an early period a system of common or popular schools. These, like those of the early church on the continent, originated with the clergy. In 1560 John Knox urged the necessity of schools for the children of the poor, to be sustained at the charge of the kirk. The act of 1696 established common schools in every parish, to be supported in part by the parish, and in part by rate bills. These schools, which have diffused a more general elementary education among the people of Scotland than exists in any other nation in Europe except perhaps Prussia, have always been under the charge of the kirk; and since the secession of the Free church in 1843, schools have been organized in connection with each of its congregations.—The fullest and most complete development of the common school system, however, has taken place in America. The Puritan settlers of New England were fully convinced of the necessity of universal education; and as soon as they had provided temporary shelter for themselves, they reared the church and the school house. But the first schools established in the country were not common or public schools. Free grammar schools, as

they were called (that is, schools in which Latin was taught, and which were supported in part by the proceeds of land, houses, or money granted either by the town or by individuals, and in part by tuition money, and which were free only to the donors, and to them only in part), were established in Charles City, Va., in 1621, in Boston in 1636, in New Haven in 1638, in Salem in 1641, in Roxbury prior to 1645, and in most of the towns of New England within four or five years after their settlement; but these, though comprising at first perhaps the major part of the children of the settlement, were not common schools in the present sense of that term. The free public school (the common school of our time) was of New England origin, but whether it was first established in Massachusetts or Connecticut is a mooted point. Acts in regard to popular education were passed by the general court of Massachusetts in 1642 and 1643. The law of the latter year provided as follows: "It is therefore ordered that every township in this jurisdiction, after the Lord hath increased them to the number of 50 householders, shall then forthwith appoint one within the towne to teach all such children as shall resort to him to write and reade, whose wages shall be paid either by the parents or masters of such children, or by the inhabitants in generall by way of supply, as the maior part of those that order the prudentials of the towne shall appoint, provided those that send their children be not oppressed by paying much more than they can have them taught for in other townes." But if the general assembly of Massachusetts were foremost in legislative action for popular education, the town authorities of Hartford, although a younger colony, had at an earlier date taken broader and more liberal ground for the education of all classes; and as Hartford was the central and controlling settlement of the Connecticut colony, its action was but the precursor of the legislative action which followed a very few years later. A town school was established prior to 1642, and the funds for its support were voted from the town treasury; and in 1643 a vote was passed, which in its spirit still governs the educational system of the state, "that the town shall pay for the schooling of the poor, and for all deficiencies." The colonies of New Hampshire and Vermont followed the example of Massachusetts and Connecticut, and established schools in every hamlet where the number of inhabitants and of children was sufficient to furnish employment and support to a teacher. The records of the general courts and of the towns show that the prosperity of these "fountains of intelligence," as they appropriately called the common schools, was an object of common solicitude; and though very heavily taxed for other objects, they never forgot to support and sustain the common school. We have seen that in Germany the thirty years' war broke up the system of public schools which Luther and his successors had reared with so much care; but in New England, amid almost incessant conflicts with the Indians and French, when the male population was greatly reduced in the successive campaigns, the abandonment of the schools was not even thought of. In 1670 the commissioners of foreign plantations addressed to the governors of the colonies several questions relative to their condition. To one respecting the means of education, the governor of Connecticut replied: "One fourth of the annual revenue of the colony is laid out in maintaining free (common) schools for the education of our children." To the same question Gov. Berkeley of Virginia replied: "I thank God there are no free schools nor printing, and I hope we shall not have these hundred years." Soon after the close of the revolutionary war, the lands in Ohio known as the Western Reserve, belonging to Connecticut, came into market. The proceeds of that vast tract, amounting at the time of sale in 1795 to $1,200,000, were consecrated to the support of the common schools of the state. To the same cause Massachusetts set apart a portion of her wild lands in the then province of Maine. The New England school system at the commencement of the present century was based upon the following ideas: 1, the instruction of all the children of the state in the rudiments of an English education, viz., reading, writing, elementary arithmetic, elementary geography, and grammar—this to be accomplished by schools in every precinct or district containing 50 householders, or even a smaller number; 2, each district to be independent of every other in its financial matters, hiring of a teacher, &c.; 3, a superintendent or board of visitors in each town or school society, generally consisting of professional men, and almost invariably including the clergy, to examine the teachers, inspect the schools, prescribe text books, &c.; 4, the support of these schools by taxation and rate bills, the poor being exempted from the latter; 5, power of compelling attendance on the part of the town authorities. Under this system, which was extended to New York, Ohio, Pennsylvania, and the other northern and northwestern states, a moderate amount of education was diffused through the entire community. In time, as the result of a routine system, it became apparent that the standard of education had been lowered rather than raised. The attention of philanthropic men in all parts of the country was directed to the subject, and in 1817 and the following years commenced a revival of education, the influence of which is still felt. The movement resulted in the establishment of the public school society in New York, and of improved school organizations in many other cities; the revision of the school systems of most of the New England and of several of the middle and southern states between 1821 and 1828; the efforts of Thomas H. Gallaudet, James G. Carter, and Walter R.

Johnson, through the press, to elevate the standard of instruction and to create institutions for the professional training of teachers; the establishment of the "American Journal of Education" in January, 1826, afterward called the "American Annals of Education;" the improvement of text books; conventions, town, county, and state, held throughout New England from 1826 to 1830 in behalf of common schools; the subsequent organization of teachers' institutes and associations; the founding of normal schools; the zealous and unwearied efforts of Horace Mann, Henry Barnard, and others; the plan of lecturing in every precinct in the states on the subject of education; and the establishment of local school periodicals, as well as of those of a more general character. In the United States the organization and control of the common schools are left to the respective states; hence there is no uniform common school system, but a wide diversity of plans is presented. The variances, however, relate chiefly to details, while the following leading features may be regarded as common: 1. A system of graded schools for each town, embracing (*a*) primary schools for the younger pupils; (*b*) grammar schools for the older, in which are taught, in addition to the ordinary branches, natural philosophy, chemistry, history, and frequently drawing, vocal music, algebra, geometry, French, and German; (*c*) high schools for the more advanced, in which are taught the studies necessary for a business education, and in most cases the languages and higher mathematics. 2. The placing these under the constant supervision of one or more efficient visitors, who ascertain by thorough examination the qualifications of the teachers. 3. The enforcement of uniformity of text books, and regularity and punctuality of attendance. 4. Regular and frequent public examinations. 5. The establishment of school libraries in connection with all the schools. 6. The introduction of blackboards, globes, orreries, maps, charts, outline maps, and other apparatus for instruction. 7. The proper construction of school houses, for ventilation, warming, convenience of instruction, and promotion of order. 8. The establishment of normal schools for the instruction of teachers, and the holding of teachers' institutes for exercise and drill of those already engaged in instruction. 9. The organization of state teachers' associations for comparison of methods of teaching, and the establishment of state periodicals devoted to schools. 10. The extension of the privileges of these schools to all the children of school age in each state, either by supporting the schools entirely by taxation and the income of funds where they exist, or by taxation and small rate bills, which are abated where there is inability to pay, and the furnishing the necessary text books to the children of the poor. The study of drawing, music, and German as regular branches in the common school has recently been widely extended. The introduction of evening schools into the common school system is of recent origin; but there has been a marked development in this department of public instruction. These schools are intended for those whose employment prevents them from attending the day schools, and are found chiefly in cities and the larger manufacturing towns. Some of the states have the advantage of considerable funds to aid in the support of their schools. The western states generally will be largely endowed, as the 16th section of every township is granted for school purposes by the national government, and other lands also are granted by the states. The land granted by the United States for school purposes amounts to about 68,000,000 acres, which has been estimated to be worth more than $60,000,000. In most of the states the schools are under the supervision of a board of education or a state superintendent, generally elected by the people, but in a few instances receiving their appointments from the governor or legislature. In some of the states the system also comprises county superintendents. In several of the states laws have been passed making attendance at public or private schools compulsory for a specified period, varying from 16 months between the ages of 5 and 18 years, to 4 months each year; while in other states those districts in which schools are not open for a specified period are not entitled to any portion of the school fund. Provision for compulsory attendance at school has been made in the constitutions of Arkansas, Missouri, North Carolina, South Carolina, Texas, and Virginia, and in other states laws are in force compelling parents to send their children to school. In Kansas, Nevada, Arkansas, Nebraska, Ohio, and South Carolina sectarian instruction and control are forbidden by the constitution. Prior to the civil war the southern states had no well organized school system; but in the adoption of new state constitutions after the war provision was generally made for the establishment of free common schools. Much progress has been made toward carrying into effect these provisions and perfecting the free school system. The common school funds in the various states generally consist of such grants of land as have been made by the general government for school purposes, and the investment of funds arising from sales of the same, together with those accruing from state and individual endowments, and the proceeds from taxation, including poll and property taxes. In 1867 a law was passed by congress establishing a bureau of education for the purpose of collecting such statistics and facts as shall show the condition and progress of education in the several states and territories, and of diffusing such information respecting the organization and management of school systems and methods of teaching as shall aid the people of the United States in the establishment and maintenance of efficient school systems, and otherwise promote the cause of education through-

out the country. This bureau is in successful operation, and publishes annually a report showing the condition of the common schools and other educational institutions in each state.—According to the census of 1870, the number of public schools in the United States was 125,059, employing 183,198 teachers, of whom 74,174 were male and 109,024 female. The number of pupils in attendance was 6,228,060, including 3,120,052 males and 3,108,008 females. The total income during the year ending June 1, 1870, was $64,030,673, including $144,533 from endowments, $58,855,507 from taxation and public funds, and $5,030,633 from other sources, including tuition. These statistics do not include private schools, or classical, professional, and technical institutions. The following statistics of common schools in the United States are from the report of the bureau of education for 1872:

STATES, AND TERRITORIES.	Between the ages of—	Number enrolled.	Average attendance.	No. of schools or school districts.	Average duration of school in months and days.	No. of teachers.			Average salary of teachers per month.		Income.	Expenditures.	Amount of permanent school fund.
						Male.	Female.	Total.	Male.	Female.			
Alabama	5–21	141,312	107,666	3,321	3 m. 8½d.	2,318	1,152	3,470	$42 50	$42 50	$640,627	$560,000	$2,495,210
Arkansas	5–21	107,908	.....	2,534	.....	1,901	401	2,302	.....	.....	625,053	405,748	35,192
California	5–15	80,983	69,645	1,378	6 m. 10d.	820	1,232	2,052	74 58	60 69	1,675,757	1,727,883	1,250,000
Connecticut	4–16	113,588	79,511	1,630	8 m. 12d.	699	2,194	2,893	66 56	32 69	1,503,617	1,496,980	2,048,375
Delaware	5–21	19,018	.....	402	5 m. 22d.	.....	.....	.....	.....	.....	113,727	105,407	.....
Florida	4–21	14,000	.....	331	4⅝m.	.....	.....	331	30 00	30 00	129,430	.....	311,740
Georgia	5–21	39,766	26,773	1,291	2 m. 15d.	620	268	888	55 54	38 37	292,000	.....	350,000
Illinois	6–21	662,049	329,799	11,231	6 m. 27d.	8,761	11,830	20,924	50 00	39 00	7,500,122	7,480,390	6,882,248
Indiana	6–21	459,451	286,301	9,100	5 m. 16d.	7,430	4,816	12,246	.....	.....	1,590,818	3,559,898	8,395,135
Iowa	5–21	349,633	218,131	8,563	6 m. 14d.	5,888	9,305	15,193	36 04	29 32	4,242,978	4,045,408	3,191,483
Kansas	5–21	106,663	61,588	3,419	5·4m.	1,747	2,048	3,795	40 20	31 50	1,049,592	714,198	745,212
Kentucky	6–20	.....	120,866	5,381	.....	.....	.....	.....	.....	.....	968,176	941,304	1,350,491
Louisiana	6–21	91,500	70,000	640	6 m. 10d.	865	555	1,420	65 00	65 00	554,973	581,834	1,193,500
Maine	4–21	126,311	97,596	4,171	106½d.	1,800	4,200	6,000	33 17	14 40	868,583	849,278	312,975
Maryland	5–20	115,633	56,435	1,509	9 2·11m.	1,020	1,249	2,269	45 83	45 83	1,231,622	1,214,729	315,370
Massachusetts	5–15	276,602	205,252	5,193	8 m. 28d.	1,024	7,419	8,443	85 09	32 39	5,663,930	5,663,930	1,361,173
Michigan	5–20	296,356	180,000	5,365	7½m.	3,032	8,610	11,642	49 25	26 75	3,648,259	3,019,925	3,540,998
Minnesota	5–21	120,352	62,046	2,933	6 m. 18d.	1,656	3,056	4,712	37 39	24 57	954,182	990,936	2,780,559
Mississippi	5–21	111,686	79,937	3,450	5 m. 10d.	2,256	399	2,655	58 90	58 90	1,213,248	869,766	1,950,000
Missouri	5–21	330,070	187,024	29,398	4½m.	.....	.....	8,816	35 00	35 00	1,687,573	1,749,049	4,689,423
Nebraska	5–21	28,786	.....	1,410	74d.	773	739	1,512	38 50	33 48	537,680	534,095	.....
Nevada	6–18	3,372	2,372	76	8 m. 10d.	29	47	76	116 53	88 73	110,962	98,468	104,000
New Hampshire	4–21	72,762	49,293	2,452	4 m. 4½d.	585	3,241	3,826	37 56	24 33	468,527	468,527	None.
New Jersey	5–18	169,430	86,812	1,390	8 m. 18d.	952	1,979	2,931	57 34	32 43	2,375,641	2,375,641	550,783
New York	5–21	1,028,110	493,648	11,350	35w. 1d.	6,481	21,773	28,254	.....	.....	10,671,566	9,607,903	2,978,576
North Carolina	6–21	105,680	.....	.....	4 m.	3,078	1,054	4,132	25 00	20 00	217,409	.....	1,959,380
Ohio	5–21	708,800	408,538	14,201	152d.	9,718	12,343	22,061	42 00	29 00	7,420,338	6,817,358	3,912,497
Oregon	4–20	.....	15,000	659	18w.	.....	.....	.....	50 00	40 00	139,924	.....	500,000
Pennsylvania	6–21	834,313	536,221	15,999	6 m.	7,753	10,615	18,368	41 71	34 60	7,622,420	8,333,032	.....
Rhode Island	5–15	27,720	22,176	727	34 w. 2d.	177	579	756	39 72	39 72	496,906	465,623	260,509
South Carolina	6–16	76,322	.....	1,919	6 m.	1,363	822	2,185	35 00	35 00	425,000	282,451	.....
Tennessee	6–18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,269,696
Texas	6–18	127,672	81,653	2,000	.....	.....	.....	2,233	.....	.....	1,217,101	1,222,221	5,383,198
Vermont	5–20	70,904	.....	2,503	6 m.	671	3,544	4,215	.....	.....	582,111	575,274	.....
Virginia	5–21	168,000	96,000	3,552	5 m. 15d.	2,545	1,281	3,826	30 32	28 21	775,428	923,256	1,546,069
West Virginia	6–21	76,599	51,336	2,323	3 m. 25d.	1,955	513	2,468	34 95	32 15	632,069	577,718	229,300
Wisconsin	4–20	266,014	.....	5,031	7 m.	2,885	6,283	9,168	.....	.....	.....	1,932,539	2,389,488

COMMONS, House of. See PARLIAMENT.

COMMUNE DE PARIS. **I.** The name of a revolutionary committee which played a most important part in France from July 14, 1789, to July 27, 1794. On the first insurrection the Parisian electors convened, and under the above name appointed a standing committee, which, on the eve of the taking of the Bastile (July 13, 1789), established the Parisian militia or national guard. A decree of the constituent assembly, May 21, 1791, divided the commonalty of Paris into 48 sections, electing a mayor and 16 administrators, to which a municipal council of 32 members and another board of 96 notables were added. On Nov. 10, 1791, Pétion was elected mayor; Robespierre, Billaud-Varennes, and Tallien entered the general council, while Manuel held the office of attorney, and had Danton as his first assistant. Henceforth the commune acted in concert with the Jacobins, and on the night of Aug. 10, 1792, established themselves as the insurrectionary commune, declared all other authorities suspended, and soon became the ruling power, and spread terror among the royalists by the slaughters of September. Next they joined the Montagnards, and organized the insurrectionary movements which resulted in the fall of the Girondists, May 31 and June 2, 1793. During the reign of terror they remained faithful adherents of Robespierre until his overthrow. Their very name was suppressed by the constitution of the year III., under which the city of Paris was divided into 12 distinct municipalities, and the commune entirely lost its political importance. **II.** A revolutionary attempt to establish absolute municipal self-government in Paris in 1871. First openly begun by the resistance of the national guard to the regular forces on March 18, in some degree organized by the municipal elections of the 26th, and assuming definite shape through the

formal proclamation of the commune on the 29th, it was finally suppressed by the troops of the national government two months later, after having in the interval become complicated with attempts to carry out various notions of socialism, and with other schemes of revolution apparently not comprehended in the original design, and certainly not stated as a part of it. The red republicans and the more violent reformers of Paris had, since the dethronement of Napoleon III. and the proclamation of the republic in September, 1870, never ceased to attack what they considered the conservative character of the government of national defence then established, and to demand more radical measures, especially such as should tend toward decentralization, municipal independence, and the introduction of something approaching a federative system made up of self-governing communes. Diligently and sincerely advocated by many of the leading radical politicians, and industriously propagated for their own purposes by political agitators, revolutionists, and adventurers in the city, these opinions gained ground very rapidly among the people. They already formed one of the many articles in the political programme of the working men's societies, especially in that of the widespread *internationale*. By many they were undoubtedly accepted understandingly and with due knowledge of the end to be gained; but they were largely used as a political device by demagogues and the lowest order of revolutionary popular leaders, who represented to the laboring classes the establishment of municipal self-government as the beginning and the means of various more or less vaguely stated reforms in their condition. Thus the cry of "*Vive la commune!*" used intelligently by the few, became besides, like so many similar cries before it, the expression of the discontent and the somewhat aimless though violent agitation of the revolutionary proletarians. This agitation, though its expressions were generally confined to the radical clubs—like that of the Salle Favié at Belleville, that of the Alcazar, and many others—had already broken out several times during the German siege of Paris in riotous demonstrations originating in one of the suburbs Montmartre, Belleville, or La Villette, and having for their object the possession of the hôtel de ville. The most important of these was that of the 31st of October, 1870, when the mob, infuriated by the news of the surrender of Metz and the defeat at Bourget, fairly gained possession of the place, and even of the members of the government in session there at the time, but were compelled to withdraw by the national guard, though only on condition that a vote determining the confidence or want of confidence of the people of Paris in the government of national defence should immediately be taken. This vote was ordered for Nov. 3, when the government was sustained by overwhelming majorities; but the radical leaders had shown their growing power, and this riot was the most unmistakable herald of the coming insurrection. Finally, when the long series of French defeats and unsuccessful sorties terminated in the surrender of the capital to the Germans, and the idea, "The government has betrayed us," gradually gained ground among the people, the national guard began to waver, then to join openly in the clamor, until finally, by making the first really formidable insurrectionary movement, they themselves became as it were the leaders in the revolutionary attempt from which they had before comparatively stood aloof. On the triumphal entry of the German army into Paris, March 1, 1871, detachments of the nationals, who had by express stipulation been suffered to remain under arms "for the preservation of order," made hostile demonstrations in violation of the agreement of the government, erecting barricades in several portions of the city, and remaining in an attitude of resistance; and they placed themselves in still more decided opposition to the authorities by their refusal, in spite of the formal order of Gen. Aurelle de Paladines, the commandant, to give up the artillery which had been removed on Feb. 26 from the parc Wagram and other places, ostensibly to preserve it from falling into the hands of the Germans. Thus taken into their possession under cover of a purpose which, though in direct violation of the armistice agreement, passed for a patriotic one, this artillery proved one of the chief sources of their strength in the beginning of the insurrection. The government did not at first attribute to this direct resistance to its authority the importance which it possessed; and in the interval of temporizing policy which followed, the insurrection grew stronger with great rapidity. The first step taken, the commune leaders won adherents by thousands. The negotiations of the authorities with the Germans aided them; for not only was there a great number of the people to whom the thought of peace on the apparently inevitable terms was, from purely national pride and patriotic feeling, almost unbearable, but there was also a perhaps still larger class, composing the worse portion of the national guard especially, which saw in the end of the war the end also of their living at government expense, and looked forward to the return of hard labor, the enforcement of creditors' claims, the collection of rents, and a thousand evils they had evaded during the war. Both these classes, and many more, flocked eagerly to the standard of the commune, whose leaders raised the cry, "The republic is in danger!" and in a few days the insurrection became too formidable to be checked. An organized body now appeared as its head. This was the central committee of the national guard, a council of leading insurgents, at first under the controlling influence of Blanqui, which had long acted as a half-concealed conspiracy, but now came forward openly. Its power was for a time threat-

ened by another committee claiming to be the regularly elected representatives of a federation of battalions; but a fusion was effected between the two, and the central committee, thus reconstructed, found itself with even greater influence than before. Acting under its orders, the insurgents had taken the cannon on Feb. 26; directed by it, they now possessed themselves of great quantities of arms and ammunition from the fortifications, and took up their principal position in an intrenched camp on Montmartre. They took magazines, compelled the release of public prisoners, and even came into open conflict with small bodies of regular troops, some of whom were induced to join them. They began to call themselves the "federated guards," in distinction from those nationals who had remained loyal. From its stronghold at Montmartre the central committee issued inflammatory proclamations, demanding that the national guard should have the right to elect all its own officers; that the daily pay (war standard) of one franc and a half should be secured to each of its members until he could obtain work, or the government could obtain it for him; that Gen. Aurelle de Paladines should be displaced to make room for a commandant of their own choosing. In what concerned general politics they demanded universal suffrage, and the formal subjection of all military power to the civil authority of the Paris municipality. The greater part of these demands were sent to the minister of the interior, with much of the formality attending the presentation of an ultimatum from a hostile power. —Such was the position of affairs when the new national government, headed by M. Thiers, at last perceiving with what they had to deal, determined upon the employment of force. They rapidly collected the troops that could be spared from other employment, and brought the detachments stationed in Paris up to the strength of 30,000 men, including that minority of the national guard that remained loyal. On March 11 Gen. Vinoy, to whom the task of dealing with the matter was largely intrusted, had, just after the receipt of the demands of the reds, suppressed six of the most violent radical journals, *Le Vengeur* (the organ of Félix Pyat), *Père Duchêne*, *Le Cri du Peuple*, *La Bouche de Fer* (the organ of Paschal Grousset), *La Caricature*, and Rochefort's paper, *Le Mot d'Ordre*. With the exception of this, however, no decisive act had revealed the intentions of the government; the quieter classes of Parisians, with singular blindness, seemed to have no idea of an approaching conflict; the difficulty, if referred to at all, was spoken of lightly as "the cannon question;" the insurgents on Montmartre remained quiet for several days; and a lull preceded the final crisis which promoted a general sense of security, and gave the outbreak when it came additional violence. On the night of March 17–18, 10,000 of the government troops finally took up positions of attack about the base of Montmartre. These occupied, they pressed on to the summit of the hill, easily overcame the few guards stationed about the camp of the insurgents, took 400 prisoners and several cannon, and before daylight made themselves masters of the place without encountering formidable resistance. So quietly was this done, that no general knowledge of the movement spread through the other quarters of Paris at the time; the morning papers appeared without mentioning the events of the night, and the victors flattered themselves that the whole trouble was at an end. But some apparently trifling errors in their plan caused them to be very quickly undeceived. Nothing now remained to complete the success but the removal of the cannon; but the arrangements for carrying them away having been incompletely made, a long delay ensued, and meanwhile the news of the affair spread rapidly through the insurgent districts near at hand, and among the federated guards, the fellows of those who had been captured. The general alarm was beaten in the quarters of Belleville and Montmartre; the populace poured into the streets; and about 7 o'clock several battalions of federates, hastily mustered, attacked the government troops, with whom a violent and irregular conflict followed. Suddenly the 88th regiment of the line, among those engaged, threw up the butts of their muskets and went over to the federate side, and their example was followed later by other regular soldiers, while new reënforcements from the hostile quarters reached the insurgents constantly. Gen. Vinoy had drawn a cordon of troops around the hill, ordering them to permit no one to pass, and planting mitrailleuses covering the various roads of ascent. But these precautions were rendered useless by the fraternization of the soldiers with the people; the insurgents carried off the mitrailleuses, and the few troops remaining loyal saw themselves compelled to withdraw. In the place Pigalle a small body of such troops (200 to 300 men), commanded by Gen. Faron, was cut off from the rest in their retreat, and only succeeded late in the day in cutting a way out after a fierce conflict. Gen. Lecomte and the former commander of the national guards of Paris, Gen. Clément Thomas, deserted by their soldiers, were taken prisoners by the federates and the people, and after being insulted and maltreated by the mob they were led before the central committee, which commanded that they be held as prisoners of war. In spite of this decree, they were taken later in the day by a few federate guards into a little garden near by, and shot, Gen. Thomas, it was said, falling at the fifteenth discharge. By noon of the 18th the insurgents were once more in full possession of Montmartre and its surroundings, where they set about erecting street barricades and other defences; and toward evening, the government troops having been driven from the field, they penetrated into other quarters of the city, and first

took possession of the place Vendôme and the army headquarters there. Soon after dark they occupied the hôtel de ville without meeting any resistance; by midnight they were fairly established in it, and the national troops had been withdrawn to Versailles. The morning of the 19th found every attempt at control on the part of the government abandoned, every point in the power of the federate guards, and the central committee the rulers of Paris. Making their headquarters at the hôtel de ville, they immediately issued three proclamations, which appeared early in the day; and so short had been the conflict for the possession of the city, that a great part of the people in the distant quarters learned for the first time through the placarding of these manifestoes that a revolution had been effected, and that a new power was fairly established over them. The first proclamation announced the "triumph of the people" over those who had wished to destroy the republic, and exhorted the people of Paris to assemble for communal elections; the second addressed the national guard, and declared that the central committee, having "fulfilled the mission" intrusted to them by their fellows of defending "Paris and their rights," were now ready to surrender their trust to those whom the people should elect in their communal districts; and the third finally fixed the communal elections for the 22d, owing to the urgent necessity for a communal administration. The red flag was hoisted on the hôtel de ville, the prefecture of police and the department of finance were taken possession of by prominent insurgents, and the earlier half of the day was spent by the committee in deliberation as to their next action. Strange to say, the general population of the city remained indifferent and passive, though a number of citizens, who recognized Vice Admiral Saisset on the boulevard, begged him to organize some resistance to the reds; he declared, however, that he would not act without orders from Versailles. But a few representatives of the national authority still remained in the city, in the persons of the *maires* of the various arrondissements. These met at 3 o'clock at one of the *mairies*, and, consulting with delegates from the committee, agreed during the evening upon a compromise by which the matter was to be submitted to the national assembly, and the hôtel de ville was to be given up to the maires. A peaceful solution of the whole conflict seemed for a moment possible; but when on the morning of the 20th the proper authorities went to take possession of the hôtel, they were told that the committee had retracted its decision, and affairs resumed their old aspect. On that day another proclamation was issued, again stating the rights claimed by the national guard, declaring that the committee would faithfully carry out the preliminary agreements made with the Germans, as the revolution was not concerned with any but home politics, and appealing to the provinces to join in the movement for self-governing communes. This appeal was almost entirely without effect, although Blanqui had already left Paris, undoubtedly with the purpose of securing aid from the rest of France. Attempts at insurrection were indeed made in Marseilles, Lyons, Rouen, Toulouse, and one or two other cities, but all were soon suppressed. Blanqui, so long the head and front of the uprising, was arrested in southern France, and immediately imprisoned. The communal elections were postponed to the 26th. Vice Admiral Saisset, now acting under official appointment from Versailles, made one more attempt at negotiation by the issue of a proclamation in which the greatest possible concessions were promised; but the time had passed, and, beyond conveying the impression that the government was frightened, the offer produced no effect. Yet, still deceived by the hope of peace, Saisset on the 25th disbanded the defenders of the national government who had organized and rallied around him, and by this step destroyed the last hope of resistance; the only other attempt to excite it having been made by a few citizens who were cut to pieces in the rue de la Paix, March 22. From the 25th no further opposition occurred within the city walls, and Paris was given over to the new régime. In the mean time the committee had taken the most energetic military measures for sustaining their power. The federate guards raised complete lines of barricades connecting all the important strategic points of the city; a strict organization was introduced among the 250 battalions that now formed the committee's army; the great stores of ammunition accumulated in Paris during the siege were seized; the number of cannon in the possession of the insurgents was increased by further seizures to 2,000; the defences of the walls were diligently strengthened; the forts, with the very important exception of Mont Valérien, which was in the government's hands, and such of the eastern and northeastern fortresses as the Germans still held, were taken and occupied by the federate troops; and complete preparations were made for the defence of the city against a siege.—On March 26 the elections for 94 members of a communal government occurred in Paris; only 85 were actually chosen, however, owing to the fact that in some cases two sections united upon the same candidate. It was afterward proved that fewer than 200,000 of the people had voted, and thus that the government party would probably have been in the majority if it had been organized and had dared to cast its ballots; but however this may be, the elections were of course overwhelmingly in favor of the leading candidates of the insurgents. Of these, 13 were members of the central committee, 17 were members of the internationale, and 20 belonged to what was distinctively known as the Blanqui party. There were also 17 mode-

rate and conservative politicians elected from the wealthier districts of Paris, but they almost immediately resigned. Among all the delegates there were comparatively few whose names were well known. Assi, Varlin, and Duval, prominent members of the internationale; Félix Pyat, the journalist and *littérateur*, author of the *Chiffonnier de Paris;* Raoul Rigault, a cynical and bitter revolutionist, recalling the men of terror of nearly a century before; Paschal Grousset, a journalist admired less for his revolutionary qualities than for elegance and polish of manner; Gustave Flourens, the son of the great physiologist, and himself a man of much scientific and literary cultivation; Vermorel, a journalist of the quartier Latin; Vesinier, the former secretary of Eugène Sue, and himself the author of a few novels; Gambon, a hero of the insurrection at Bordeaux; Tridon, a revolutionist of Rigault's school: these were among those elected to the new governing body. There was also the stern old republican and Jacobin Delescluze, and M. Bislay, an uncompromising republican, to whom the excesses of the commune were entirely foreign. Victor Hugo and Rochefort were also elected, but withdrew without having taken any part in the principal events. Blanqui's name, in spite of his absence, appeared on the lists; he was elected, and a substitute appointed to represent him. Gustave Paul Cluseret, who had already taken part in many insurrections, and was one of the few whose practical knowledge of military affairs could be of advantage to the insurgents, was a candidate, but was not returned until a second election held April 16 to fill vacancies. He may almost be considered a member from the beginning, however, as he held office under the commune from April 3, as will presently be shown. On the 29th the first regular sitting of the newly chosen delegates was held at the hôtel de ville. The commune (by which name the new assembly now first officially styled itself) was declared to be the only true and legitimate government of the city; and a *Journal officiel de la Commune de Paris* was founded, in which a series of decrees was immediately published. The old revolutionary calendar was restored, March 29 being announced as the 8th Germinal, year 79; laws were issued requiring every healthy citizen from 19 to 40 to serve in the national guard; a provision granting partial remission of rents due since Oct. 1, 1870, was to go into force immediately, and no one could be arrested for the non-payment of such rents; the payment of all due bonds and notes might be postponed for three years from July 1, 1871, quarterly payments being made meanwhile; the daily pay of the national guards was raised to 2½ francs; all articles that had been pawned for a sum not exceeding 20 francs were to be returned to their owners; pensions were to be paid to the widows and orphans of those falling in the insurrection; all factories the possessors of which had left Paris were to become the property of the workmen employed in them; and a variety of minor provisions were to go into effect for similar purposes of relieving and satisfying the adherents to the new power. The commune now proceeded to organization; and the newly elected body found its early sittings the scenes of numberless quarrels. The military class of delegates had nothing in common either in aim or method with the working men; the journalists and politicians had a thousand theories and creeds; the men whose devotion to the cause was so strong and unselfish as to lift them above personal motives were in the minority; and among the others personal jealousies were constantly displayed. Many members began to neglect attendance on the meetings, and confusion reigned during the sittings at the hôtel de ville. After much discussion, however, an executive committee was formed, consisting of Bergeret, Duval, Eudes, Lefrançais, Pyat, Tridon, and Vaillant; commissions were formed for the administration of justice, the finances, military affairs, labor, public works, foreign affairs, and instruction, with committees on public safety, on subsistence, &c.; and the conduct of the commune's government assumed some definite shape. All this time the central committee of the federates, which had announced itself as so eager to give up its power into the hands of the commune, and had even proclaimed its resignation, continued sitting, refusing to keep its word, and insisting upon ratifying every measure of the commune before it took effect.—Both the delegates and their adherents were impatient to move upon Versailles, to gain possession of the national government there, to overpower the officials—"*écraser l'assemblée*," as the *Père Duchêne* expressed it. The attempt was fixed for April 2. In the forenoon of that day (Sunday) the troops of the commune, to the number of 5,000 to 6,000, were pushed forward in the direction of Mont Valérien. The national government, perhaps in the hope of still bringing about a settlement of the difficulty, but more probably following the characteristically cautious advice of M. Thiers, to render it manifest that the first direct hostilities came from the other side, sent a flag of truce to meet them. Its bearer was seized and shot, through whose fault does not clearly appear. A battle, or rather a skirmish, ensued, in which the irregular federate guards, not finding among the soldiers that readiness to join them which they expected, but being met with determination, soon gave way before the regular troops, and fled into Paris. Aroused by this defeat, and instructed by experience as to the strength the government now possessed (for the national authorities at Versailles had during the occurrence of the events just related diligently made preparations on their side, and were bringing together an army of 150,000 men, soon placed under the command of MacMahon), the commune leaders instantly prepared to renew the fight. Nearly the whole force in

the city was brought together during the evening and night following, and at dawn of the next day (April 3) nearly 90,000 men, divided into three columns, took the field. The centre column, under Bergeret, was to advance in the direction of Meudon, under cover of the southern forts in the possession of the commune; while the left, under Eudes, was to approach Versailles by way of Vaugirard, Montrouge, and Châtillon; and the right, under Duval, pressing forward from the Rond-Point de Courbevoie, was to pass directly under the guns of Mont Valérien (which the communist leaders were led by rumors and appearances to believe evacuated), and advance upon Nanterre and Rueil. The advance of the three divisions was interrupted almost simultaneously in their three directions of march by the national troops. Bergeret's column was met by a division of the regulars at Meudon, and driven back; the left, under Eudes, encountered a corps of marines and sailors temporarily constituting a portion of the national army, and was compelled to retreat after a fierce conflict. The column under Duval met with the most disastrous fate of all. As it passed directly before Mont Valérien, the commander of the fort, to keep up the delusion with regard to its evacuation, reserved his fire altogether until the column had continued its march so far as to bring the main body of the troops within the closest range. Then he began a merciless cannonade, which nearly annihilated the whole centre of the division. That part which had passed on saw itself cut off, and the troops in the rear fled in a panic. Duval was taken prisoner and shot. Gustave Flourens, who was among the troops cut off, succeeded, amid the flight of his soldiers, in gaining a hiding place in a little house not far from Rueil. He was discovered, however, by gendarmes, and after a desperate resistance was struck down and killed by the blow of a sabre, the commune losing in him probably the most brilliant of its leaders. Immediately after the defeat Gens. Eudes and Bergeret were superseded, and Cluseret was intrusted with the whole management of military affairs, under the title of "delegate for war." On the morning of the 4th he himself took command of the communist troops, and some attempts were made to retrieve the disasters of the day before, especially to regain the heights of Châtillon, which the insurgents had abandoned after their defeat; but they were unsuccessful. These reverses caused violent dissensions among the members of the commune. Assi, accused of having contributed to them, was arrested; and later, Bergeret's place in the army was taken by a Pole, now first becoming prominent in the insurrection, Ladislas Dombrowski, who was also made commandant of Paris. Other changes were brought about among the insurgent leaders, and with them came some decrees and acts of the commune which seemed like the beginning of another reign of terror. Gen. Cluseret issued orders directing that every man from 17 to 40 must enter the service, and that those disobeying this command would be summarily dealt with. Requisitions were made upon churches and theological and public institutions having property in the city. Several rich men were accused of disloyalty to the commune, and their possessions confiscated. The archbishop of Paris, Mgr. Darboy, and a number of other ecclesiastics and prominent persons, were arrested and held as hostages for communist prisoners in the hands of the national troops. A decree was issued wherein it was stated that the authorities at Versailles had transgressed the rules of civilized warfare, having shot prisoners in their hands; and that the commune would thereafter retaliate for all such cases. A commission (*jury d'accusation*) to decide upon these matters, upon the fate of all prisoners of war, and upon the punishment of any persons convicted of treasonable connection with the Versaillists, was immediately instituted; and the decree established the further rule that three hostages, chosen by lot, should be put to death in retaliation for each prisoner executed by the enemy. Searches for concealed arms not given up to the communist troops were conducted all over the city; men suspected of being *réfractaires* (those disobeying the order compelling them to serve) were arrested wherever found; and houses were everywhere entered, ostensibly in quest of them.—Meanwhile the national authorities, who had up to the beginning of the month adopted an altogether defensive policy, while strengthening and organizing their own army, had at last begun the most determined offensive operations against the city on the morning of April 7. Marshal MacMahon was in chief command of their forces; Gen. Ladmirault commanded under him on the side toward Mont Valérien, and Gen. Cissey at Châtillon. Early in the day the guns of Mont Valérien opened on the village of Neuilly and its bridges, which were regarded as a key to the defence of Paris on that side, and were held by the insurgents. Under cover of the cannonade the government divisions advanced and attacked the communist troops. A fierce conflict followed, in which the position was taken by the Versailles soldiers after a desperate defence; but later in the day it was again lost, and the night of the 7th found it still held by the insurgents. The next day the fight was renewed, ending at last in the victory of the national army. Formidable batteries were erected on the ground thus gained, and the guns of these, with those of Mont Valérien, were turned at once against the Maillot gate and the neighborhood of the Arc de Triomphe. The conflict continued until the short period of quiet on the 9th and 10th, without great successes for either party. On the 11th the insurgents won a decided victory by repulsing a night attack of the national troops on the forts at the south of the city, and especially on

Fort Issy. For many days after this the artillery fire on both sides was constant, being particularly severe in the neighborhood of the Maillot gate; but the infantry battles were infrequent and indecisive. Several further attempts made to storm or surprise the insurgents' forts entirely failed, and though the national army on the whole made a steady but very slow advance, the communists lost no important points until the 17th. On that day Col. Davoust of the national army captured the château de Bécon, commanding the positions of Courbevoie and Asnières; and on the 18th the commune's troops were driven from the village of Bois-Colombes, and again from Gennevilliers. On the 19th they were forced back across the Seine.—During all this time events of various importance had occurred in the city, where the principal power was now in the hands of Cluseret, the delegate for war, who became an actual member of the governing body through the supplementary elections, held to fill vacancies, on April 16. A soldier of restless energy and quick decision, he put aside the sentimentalities of the commune leaders, which had led them to intrust the conduct of important affairs to men whose sole merit consisted in their zeal for the cause, and, ruling with the greatest severity over all within his department, he introduced a new military system. He formed a general staff consisting of Rossel, a brilliant young engineer who now begins to appear prominently in the history of the commune, Col. Henry, Col. Razoua, and others having really serviceable military knowledge; he organized the troops, and to his good training and that of Dombrowski must be attributed much of the spirit and skill shown in the defence of the southern forts. The commune's conduct of affairs within the city retained its former features. On April 5 a decree had suppressed, among the papers hostile to the new régime, the *Journal des Débats*, *Constitutionnel*, *Paris-Journal*, and *Liberté;* later decrees suspended the publication of the *Siècle*, *Temps*, *Soir*, *Cloche*, *Opinion Nationale*, and *Bien Public*. On the 12th a proclamation announced the determination of the commune to demolish the column Vendôme. Requisitions were constantly made; arrests were frequent; and among the executions was that of Girot, the commander of a battalion, for refusal to march against the enemy. Dissensions among the members of the commune were continuous; and what with the distress among the people, the lack of aid from the rest of France, and the gradual loss of ground to the national troops, the situation daily became more serious. In the midst of this unfavorable state of affairs the commune published on April 19 its official "programme," long before proposed. It was a document of considerable length, but announced nothing new, and repeated in general terms what had already been made known in previous proclamations concerning the desired self-government of Paris, the decentralization of France, &c.—On April 25 attention was again concentrated on the military operations, by the proclamation of M. Thiers declaring that a great and final attack on Paris would now be begun, the government being satisfied of the uselessness of further attempts at reconciliation, and having determined to devote its energies to obtaining possession of the city. Immediately there began a vigorous cannonade of the southern forts, and a simultaneous advance of the national troops on the western side of the defences. The fire directed against Forts Issy and Vanves principally proceeded from the second parallel erected by the Germans during their siege, and now taken possession of and refitted by MacMahon. Pressing forward from this, he took the village of Les Molineaux, and thus established a position only a short distance from the walls of Fort Issy. On the night of April 29 he further succeeded in capturing the castle of Issy; and from all these advantageous points he was enabled to concentrate upon the fort an almost insupportable fire, which reduced it nearly to a ruin within the next three days. About 1 o'clock on the morning of the 30th a panic seized its garrison, and, refusing longer to defend it or obey orders in the midst of such an overwhelming attack, all but a few soldiers fled from their posts, leaving the batteries entirely silent. This defeat was attended in Paris with the same consequences that had followed the reverses a month before. The popular excitement and the clamor of soldiers and officers demanded a victim, and this time Cluseret was selected. By a brief decree issued on May 1 he was removed from office and placed under arrest, and Col. Rossel was appointed delegate for war in his place. But Issy was not yet so irreclaimably lost as it seemed. It had been deeply mined; the Versailles troops, knowing this, feared to enter it, and it was again taken possession of by a corps of insurgent volunteers. Taking advantage of the speedy arrival of reënforcements, these made a sortie, and succeeded in driving the nationals from the castle of Issy and the village. The tide of success seemed about to turn when, following the plans of Gen. Cissey, the Versailles troops executed a series of well conceived manœuvres, took first the village, then the castle, and finally occupied the fort on May 9, without a serious conflict. Issy lost, the communists found the key to the whole position on the S. W. side of the city in the hands of the enemy. Point after point fell into their possession; a new parallel was established in the southern part of the Bois de Boulogne, within less than 800 yards of the Paris *enceinte;* and a violent attack began on the inmost circle of defences. On the extreme west the national army had also met with successes. The constant fire from Mont Valérien and the many batteries established on that side had gradually beaten down the insurgent de-

fences; and the bombardment of Neuilly and the neighborhood of the Maillot gate had been so incessant as to literally demolish the suburb, and to have rendered necessary long before, for humanity's sake, an armistice of one day (given on April 25) to allow the unarmed inhabitants to go into the city. The substitution of Rossel for Cluseret availed nothing; the new delegate for war, when he had held office less than ten days, handed in his resignation, escaped from the arrest in which he was at once placed, and disappeared. Undoubtedly an able and earnest man, he was still unable to control the confusion of conflicting elements over which he was expected to rule. The military situation was now a desperate one, nothing but the inner circle of Paris itself remaining to the defenders of the commune. The governing body at the hôtel de ville were compelled to have recourse to the most extreme measures. Their finances, managed successively by Varlin and the much abler Jourde, were in a precarious condition, their forces were disorganized, and they had abandoned all hope of aid from without. They forced from the bank of France repeated advances of money, and compelled the leading railway companies to pay them 2,000,000 francs; but the constant payments to their troops, &c., made their expenditures far exceed their receipts. Few skilful officers remained among the commanders of the army, and whole battalions were without chiefs to lead them. Dombrowski, it is true, showed the greatest bravery and energy; but, with discouraged and ill-disciplined troops (he himself called them *incapables*), he could not succeed in the repeated efforts he made to restore the fortunes of the commune. The whole state of internal as well as military affairs had changed. While no delegate for war had been appointed to succeed Rossel, and the conduct of the defence was left to a committee headed by Delescluze, to Dombrowski as commander-in-chief, and to the Italian officer La Cecilia as commandant of the principal fortifications, the management of matters within the city had been given over to a committee of public safety, created by the commune about May 1, and endowed with almost dictatorial powers. Its first members were Antoine Arnaud, Léo Meillet, Ranvier, Félix Pyat, and Charles Gérardin. Under the rule of this body those acts began which were the preludes to the last days of the insurgent rule. On May 10 the committee decreed the demolition of the house of M. Thiers, an order which was carried into effect without delay. On May 16, late in the afternoon, the column Vendôme, the destruction of which had been commanded long before, was overthrown under the direction of the painter Courbet, in the presence of a great multitude of people. The insurgents seemed to be seized with a fury hardly less than madness. The desperate straits in which they found themselves called forth the most bitter hatred against the Versailles government. Popular orators harangued the crowds in the streets and in the great republican clubs, inciting them to renewed efforts and to a brave resistance. Bands of women, as in the days of the old French revolution, marched through the streets, armed, and exciting the people to vengeance upon "the assassins of Versailles." There was even a large and violent political club composed of women. The hatred against the government was carried to great extremes. The explosion of a large cartridge factory in the avenue Rapp was attributed to government agents, and extravagant rumors were circulated as to the barbarities of the Versailles troops.—The end of the defence now rapidly approached. The treaty with the Germans had been signed, and, its foreign relations thus settled for the time, the national government concentrated every energy upon the prosecution of the siege. On May 14 Fort Vanves was captured; Fort Montrouge was almost at the same time abandoned; and the earthwork constructed behind them by Dombrowski proved entirely useless after the forts themselves were in the enemy's hands. The general's attempted sorties were rendered unsuccessful by the refusal of the majority of his now disheartened troops to go far beyond the walls; and the sappers of the national army were thus suffered to carry their works close up under the enceinte. At the gates of Auteuil, Passy, and Point-du-Jour the fortifications were nearly demolished by the constant fire against them. Dombrowski's headquarters near the gate de la Muette became entirely untenable. In this state of affairs, when the moment of giving up the defence of the southwestern enceinte could not be far off, the general determined to retire to a second series of works which should be constructed a short distance in his rear, and by which he hoped to hold in check the national army, even after the capture of the outer fortifications. His plan was skilfully laid, and, had it been carried out as he intended, might have greatly prolonged the struggle. The movement of the troops to the new line of defence was fixed for Sunday, May 21. As projected, it should have been made gradually, so that neither the old line nor the new should be left entirely unprotected until the actual moment for the retreat of the last company from the outer works. But through unskilful management the battalions all retired at once, and for a time, at the middle of the afternoon, the enceinte was absolutely without a guard. Outside, the Versailles troops continued their attack; when suddenly, in a moment of quiet, they were surprised by the appearance of a man upon the wall, waving a white handkerchief, and apparently signalling for an interview. This was Jules Ducatel, a citizen opposed to the commune, who thus sought to give the national officers information as to the true position of the defence. The condition of the enceinte was ascertained, the Versailles troops

pushed forward, and by the end of the afternoon the national army began to enter the city by the St. Cloud gate. A large body of men took possession of the interior of the fortifications, extended along the walls, opened the other southwestern gates to their fellows, occupied without resistance the interior line of works erected by Dombrowski, and drove the few communist soldiers already in their new positions there back to a second series of defences prepared still further from the outer circle. By midnight more than 75,000 national soldiers were within the enceinte. A column of infantry under Col. Piquemal took the barricade protecting the bridge of Grenelle, and surprised and captured troops on the Trocadéro. So rapid were the movements of the national forces that the insurgents at work on a battery at the Arc de Triomphe were similarly surprised and driven from their works, which were at once occupied and used against the batteries at the foot of the Champs Élysées, which were still in the power of the communists. Gen. Cissey took possession of the greater part of the district of Vaugirard and the Champ de Mars, and at once secured himself in the position. With the dawn of Monday morning the more distant quarters of Paris learned with surprise that the Versailles troops were in possession of a large portion of the city. But the victory was by no means won. In the quarters of the capital where the commune was strongest the insurgents thronged to the barricades, prepared for a last desperate resistance. Though it is true that many who would willingly have yielded were forced to this last defence, there was still a great body of men who rallied loyally for the cause to which they had shown such hearty devotion, and the fights of the last five days of the commune's existence saw instances of fidelity to it such as only the most sincere conviction could have called forth from its followers, whether deluded or intelligent. Hurriedly organizing their troops and planning their defence, the leaders turned all their available force to the erection of barricades in every part of the city still in their possession. Proclamations were posted on the walls, inciting the citizens to fight to the last, and officers rode through the streets calling upon the people to make a supreme effort for the sake of their liberties. These appeals met with little response in the wealthier quarters of Paris, where the Versailles troops were greeted with every sign of welcome, but produced the greatest effect in the regions which were the insurgent strongholds, where even women and children fought at the barricades with an energy and fury equal to that of the men. The operations of the national army went steadily on during Monday and Tuesday. Following a systematic plan by which it was designed to advance simultaneously on both sides of the Seine, to take possession of the important strategic points along the outskirts of the city, and thus to form an almost unbroken cordon which could be gradually narrowed until the whole body of the insurgents should be exterminated or taken, the troops were divided into five columns. One of these, forming the right wing and commanded by Cissey, was to operate on the left bank of the Seine, pressing on from the western part of the city toward the quartier Latin; two others, under Vinoy and Douay, were to pursue a course through the centre of the city; and the remaining two, under Clinchant and Ladmirault, were to pass over the hardest ground of all, making their way directly through Montmartre and the portion of the city lying beyond it. To begin the advance of this last named division, it was first of all necessary to take possession of the plateau of Montmartre itself. On Tuesday morning, the 23d, the attack was begun. Many of the leading points around it were gained without difficulty; but for hours a strong and well defended barricade in the rue Lepic kept up a formidable resistance, and it was noon when it was finally carried by a storming party after a desperate conflict. The further defence was slight, and by 2 o'clock the height was in the possession of the national troops. There remained only the place Pigalle, the very cradle of the insurrection, which still refused to yield. Dombrowski commanded its barricade, and under his direction it maintained for two hours a most desperate defence, only ending when the communist leader fell, mortally wounded. By night the whole of this chief communist stronghold was won. On the same day (Tuesday) the division on the left bank of the Seine had overcome one barricade after another, the insurgents defending themselves with scarcely less desperate valor than at Montmartre, and, after a day of the most violent conflict, had possessed themselves of the greater part of the 14th arrondissement, and taken the positions most important for further movements, by which it was intended to partially surround and press in upon the quartier St. Germain. The centre column, advancing on the points held by the insurgents near the middle of Paris—the barricades in the place de la Concorde, near the Tuileries, in the place Vendôme, and elsewhere in the best known portion of the city—encountered everywhere the same furious resistance as in the other quarters. The place Vendôme was only taken by an overwhelming assault made at the same time on both sides, from the rue de la Paix and the rue de Castiglione. One by one the barricades in the boulevard Malesherbes and the boulevard Haussmann were taken; the neighborhood of the Grand Opera, which was strongly defended, followed after a desperate conflict at the northern end of the rue Halévy. The great barracks of Bonne Nouvelle were also captured by Gen. Ladmirault. On Wednesday morning the Bourse was taken; and the centre column was in possession of the whole surrounding quarter,

and prepared to press on with the divisions of the right and left, advancing and gradually concentrating their forces in the direction of the east of Paris, toward the last important strongholds of the commune, at the hôtel de ville and the château d'Eau.—Meanwhile the insurgents, gradually falling back, had recourse to that method of combined defence and revenge which gave the last days of this insurrection a terrible feature unknown to any previous revolution or civil war, however desperate. Organized incendiarism began, and fires broke out in every quarter of Paris. On the bodies of dead insurgents were found orders directing the burning of whole districts, and others directing the destruction of public buildings. All through Tuesday smaller fires had been set; and now, on Wednesday morning, just as the preparations we have noticed were complete, the Tuileries was discovered to be in flames; and hardly was this known before the Palais Royal, a whole side of the rue Royale, and then the distant hôtel de ville itself, were found to be burning also. A panic spread through the city, among the national troops as well as the people; extravagant rumors as to the intended destruction of all Paris by fires kindled with petroleum spread abroad; and now began a day perhaps the most terrible ever seen in the French capital since the massacre of St. Bartholomew. The national troops, already greatly embittered by the obstinate resistance of the commune, and now excited beyond control by the attempt of the insurgents to render their victory useless, and, as it seemed, to destroy the city, began a series of arrests and executions which soon passed all bounds of even apparent justice, and became a slaughter of all who chanced to fall under the slightest suspicion. It was only necessary that a man or woman should be pointed at as *pétroleur* or *pétroleuse;* they were shot down without inquiry or mercy. Houses were searched and those hidden in them were brought into the streets and killed. Many entirely innocent shared the fate of the leaders like Vermorel and Rigault, both of whom fell by these summary executions. A court martial was established in the centre of the city, but even for those who were brought before it there was in most cases only a hurried form of trial. New fires were continually lighted, either by concealed incendiaries, of whom many were taken with the implements for the work in their hands, or by petroleum bombs from the barricades and the districts still in possession of the communists. During this week of conflagrations there were consumed or partially burned, besides a great number of private houses, the palais de justice, the prefecture of police, the palace of the legion of honor, the theatre of the Porte St. Martin, the *grenier d'abondance*, several churches, many large mercantile establishments and minor public buildings; all this besides the more important conflagrations at the hôtel de ville, the Tuileries, and the Louvre. As though the events we have related were not enough to make this day (the 24th) sufficiently terrible, there occurred before its end a massacre which has left the darkest stain on the career of the commune. It has already been stated that the archbishop of Paris and numerous other prominent men had been arrested and confined as hostages for communists in the hands of the national troops. They were now in the prison of La Roquette. In accordance with an order of the commune, they were taken from their cells at 8 o'clock on Wednesday evening, and shot by a file of soldiers in the courtyard of the prison.—During the whole of Wednesday, in spite of the distraction caused by the fires, the troops had steadily continued the manœuvres by which they were gradually closing around the last insurgent strongholds. Around the burning hôtel de ville the communists contested every step of advance with desperate bravery. It was late on Wednesday night before the building, then in flames in four places, was at last abandoned. On the left bank of the Seine the resistance was still more obstinate, and it was only on Thursday afternoon that the Versailles soldiers succeeded in driving the insurgents from their last strong position on the Buttes-aux-Cailles, after the bloodiest contest since the entry into the city. Still fighting, the communists fell back to the manufactory of the Gobelins, which they set on fire. Here was their last desperate defence on this side of the river. Prisoners in their hands were forced to man the barricades, and afterward were shot down after freedom had been scoffingly promised them. After a violent struggle the Versailles troops gained possession of the whole district, and with it of the last contested spot on the left bank. Forts Bicêtre and Ivry, the only fortresses still held by the commune, were also taken on Thursday. On the right bank the troops were pressing upon the faubourg St. Antoine, and after a hard struggle the place de la Bastille was taken on Friday, and the insurgents of the district forced back to the cemetery of Père la Chaise. On the right bank, too, the château d'Eau, the chief defence of the quarter of Belleville, remained. Throughout Thursday and till Friday morning it was still untaken, and it was defended with a valor befitting its importance as one of the final strongholds. At last the insurgents gradually gave way, and, still fighting, retreated eastward through the streets toward the Buttes de Chaumont, where they had a formidable battery. The quarter of Belleville showed itself the firmest in resistance and the last to yield of all. Every point was fiercely contested as the fight went on, and the Versailles troops forced their way only step by step. Friday night came, and the quarter was still in the communists' power, though the national army, forming now almost a half circle, pressed in upon it, and the guns of their bat-

teries poured a constant and heavy fire into it, to which the battery at the Buttes de Chaumont could not make an adequate reply. An interval of quiet about midnight formed a lull before the final struggle. On Saturday, May 27, the fight was begun early in the morning, before the last two places in which the communists still maintained a strong position, the Buttes de Chaumont and the cemetery of Père la Chaise. There were untaken barricades, too, in the faubourg du Temple and the rue d'Angoulême. The conflict continued fiercely all day, point after point being taken, and it was after 7 at night when Gen. Vinoy's column took the cemetery by storm; and the battery on the summit of the Buttes held out until the early morning of Sunday, but was captured at last. In the faubourg du Temple one barricade still fired upon the national troops after the insurrection had been crushed at every other point. In spite of constant attacks, it still held out on Sunday noon. At last the insurgents were driven from it, and the Versailles soldiers, charging over its rampart, found among the dead the body of Delescluze, who had thus fought out the struggle to its end. At 5 o'clock on Sunday afternoon the firing had ceased throughout the city, and a notice from Marshal MacMahon was posted on the walls, announcing that the civil war was over. Nearly 20,000 prisoners were in the hands of the government; the dead were scattered through half the streets of Paris, and the hospitals were crowded with those of both sides wounded at the barricades. Such of the leaders as were still living and had not escaped (and among them, to speak only of those yet unmentioned in this sketch, were the half-crazy Lullier, the sanguinary Ferré, and Urbain) were imprisoned to await the sentence of the court martial held later at Versailles. The great majority of the common prisoners were set free soon after the fall of the commune; a large number were executed at Satory or transported to the penal colonies. The restoration of the injured buildings of Paris was begun at once. The adherents of the insurrection disappeared as if by magic, and the future measures of the national government were carried out in perfect quiet.—See Beaumont-Vassy's *Histoire authentique de la commune de Paris* (Paris, 1871); Moriac's *Paris sous la commune* (1871); Frédéric Lock, *La commune, deuxième siége de Paris* (1871); Clère, *Les hommes de la commune* (1871); Fetridge, "The Rise and Fall of the Paris Commune in 1871" (New York, 1871); *L'Insurrection du* 18 *Mars* (*extraits des dépositions recueillies par la commission d'enquête*), by Edmond Villetard (Paris, 1872); Jules Claretie's *Histoire de la révolution de* 1870–'71 (published in numbers, 1871–'2); Harrison's "Apology for the Commune" (essays published in the "Fortnightly Review" for August, 1871). The official accounts of the trials of the communist leaders, begun on Aug. 7, 1871, were published from time to time during the sitting of the court martial, and form a complete record of its proceedings.

COMMUNISM. See Socialism.

COMNENUS, a Byzantine family, of Italian origin, the members of which played a prominent part in the history of the Eastern empire from the middle of the 11th to the middle of the 15th century. To this family belonged six emperors of the East (from 1057 to 1185), viz.: Isaac I., Alexis I., John II., Manuel I., Alexis II., and Andronicus I. In 1204 one of its members conquered Trebizond and a portion of Asia Minor, and founded the empire of Trebizond, which continued in the hands of his descendants till 1461, when it was conquered by the Turks, David Comnenus, the last of the race, being put to death in the following year with all his family by command of Mohammed II. Other members of this family were noted as statesmen, generals, and authors. Attempts have been made to trace the descent of the Bonapartes from a Comnenus who settled in Corsica, but the pedigree has not been satisfactorily made out.

COMO. I. A province of Italy, in Lombardy, bounded N. by Switzerland and S. by Milan; area, 1,048 sq. m.; pop. in 1872, 477,642. It is traversed by branches of the Lepontine and Rhætian Alps and other mountain ridges. It is dotted with lakes, and watered by several rivers, of which the Adda and Ticino are most important. It produces corn, wine, fruit, and silk, and rears horses, mules, and cattle; contains mines of lead, iron, and copper, and quarries of white marble; and possesses manufactories of cloth and woollen and silk goods, firearms, paper, soap, candles, &c. The people are industrious, and there is at least one elementary school in each commune. Famous in ancient times as lapidaries and masons, many of the inhabitants still follow the same pursuits, and others travel about supporting themselves by the sale of barometers, looking-glasses, and kindred articles manufactured in the town of Como. The province, with the rest of Lombardy, was ceded by Austria to Italy in 1859. **II.** A city (anc. *Comum*), capital of the province, situated at the S. end of the lake of Como, 24 m. N. N. W. of Milan; pop. in 1872, 24,350. It is connected by steamboat with Camerlata, about a mile distant, and thence by railway with Milan. It has many suburbs along the lake, of which the most extensive are Vico on the west, abounding with villas, of which the villa Raimondi or Odescalchi is the most splendid, and St. Agostino, the manufacturing suburb. It is the see of a bishop, and has a splendid marble cathedral, begun in 1396; a remarkable church of still greater antiquity dedicated to St. Fedele; a town hall, completed in 1213; and a magnificent theatre built in 1813. There are several institutions of charity and learning, including three gymnasia, and a lyceum with a library of 15,000 volumes and a reading room. On a hill south of the city is the lofty tower of the Bara-

dello. Here Napoleone della Torre, having been taken prisoner by his rival Ottone Visconti, Jan. 21, 1277, was shut up in an iron cage, in which he died by his own hands after 19 months of painful confinement. Pliny the Younger (and perhaps also the Elder), Volta (a square, adorned with his statue by Marchesi, bears his name), and Innocent XI. were natives of this town. It has manufactures of silks, woollens, cotton, yarn, and soap. In former times the silk trade of Como vied with that of Lyons. After the revolution of February, 1848, the people of Como were among the first to shake off the yoke of the Austrians, and drove their troops from the city. **III. Lake of** (Ital. *Lago di Como;* anc. *Lacus Larius*), a picturesque and tortuous sheet of water, full of promontories, gulfs, and little bays. At its northern extremity a narrow channel unites it with a kind of distinct lake, called Laghetto, which receives the river Maira. Thence it extends S. W. and S. for about 15 m., and at Bellagio divides into two branches. The W. branch retains the name of Como, and is 18 m. long. The other is named Lago di Lecco, from the town of that name; its length is about 12 m. The river Adda, which enters the lake at its junction with the Laghetto, leaves it at Lecco. The width of the main lake in most places is not more than 1 or 2 m., but just above the separation of the two branches it is 3 m. across. The banks are formed of precipitous mountains from 2,000 to 3,000 ft. high. A mild and genial climate, a fertile soil, profusion of fruits and vegetables, and prosperous villages scattered over the country, combine to render its banks one of the most delightful regions of Italy. Among the handsome mansions which



Como.

line the shores are the villa Melzi, the villa Ciani, formerly d'Este, long the residence of Queen Caroline of England, the villa Carlotta, formerly Sommariva, which contains a fine museum, and the villa called Pliniana, on account of the intermittent spring described both by the elder and younger Pliny, and still exhibiting the same phenomena.

COMONFORT, Ygnacio, a Mexican statesman, born in Puebla, March 12, 1812, killed near San Luis Potosí, Nov. 13, 1863. He entered the Jesuit college at Puebla in 1826, became a captain of cavalry in 1832, and took part in the revolution of that year. In 1834 he was made prefect and military governor of the district of Tlapa; in 1842 he was elected member of the national congress, but this was soon dissolved by Santa Anna, and Comonfort resumed his functions in Tlapa. In 1846 he was reëlected to congress, but this congress was dissolved by Paredes, and the liberals instigated the revolution of August, 1846, in which Comonfort took a conspicuous part. Appointed third alcalde of the capital, and afterward prefect of western Mexico, he relinquished these posts to engage in the war with the United States; and on Santa Anna's dissolving the army and leaving the capital open for the Americans, Comonfort commenced organizing guerillas in the west, when he was summoned to the congress of Querétaro, where a treaty of peace was concluded with the United States. He was now chosen senator by his native state, and served in this capacity till 1851. In 1852–'3 he was the representative in congress of the state of Guerrero, and acted as custom-house director of Acapulco and other places until Santa Anna's return to power, when he was dismissed. He now joined Alvarez, and proclaimed the plan of Ayutla, March 11, 1854. Repairing to New York, he raised funds to carry on the war, and on his return took a prominent part in the

campaign, at the end of which, in 1855, Santa Anna was compelled to abdicate. Alvarez assumed the supreme government, but soon delegated his authority to Comonfort, who became provisional president, Dec. 11, 1855. He met with strenuous opposition on the part of the clergy, the army, and the large body of the conservative party. The junta of Zacapoastla declared itself on Dec. 19 against the president, and a little later the seat of revolution was transferred to the city of Puebla. Over 5,000 men assembled there in February, 1856. Comonfort marched against the insurgents, and having forced them to surrender, he promulgated on March 31 a decree ordering the confiscation of the property of the church, which was followed on June 28 by another decree forbidding the clergy to hold landed estate. The clergy labored to undermine the government, and revolts broke out in Puebla in October, 1856, and afterward in San Luis and other places; and although they were quelled, the country remained in a distracted condition. The congress which assembled Feb. 5, 1857, drew up a new constitution, which was promulgated March 11. This vested the legislative power and the control over religious and military affairs exclusively in congress. Comonfort was eventually constrained, in October, 1857, to apply for extraordinary powers. These were granted by congress Nov. 4, and he was proclaimed constitutional president Dec. 1. Opposed by the clergy and the army, he could only depend upon the brigade of Gen. Zuloaga, which was attached to him personally. By a pronunciamiento at Tacubaya, Dec. 17, this brigade declared itself against the new constitution, and appointed Comonfort chief of a new government; but by a new pronunciamiento of Jan. 11, 1858, they discarded him altogether, and the insurrection which broke out on that day in the capital led to a bloody struggle of several days. Appointing Juarez, president of the supreme court, provisional president, Comonfort vainly attempted to regain his authority by force of arms. On the morning of Jan. 21 the capital was in the hands of the insurgents. The house of representatives, convoked on the same day by Zuloaga, appointed that general provisional president, while Juarez convened a congress at Guanajuato to guard the rights of Comonfort. The latter in the mean time, deserted by his soldiers, took his departure from Mexico in February, 1858, and repaired to the United States, and afterward went to France. Juarez, having triumphed over Miramon and the church party, was chosen president in 1861. Shortly after the close of 1861 Comonfort returned to Mexico, and offered his services to Juarez, by whom he was appointed commander of the army. He was on his way from Mexico to San Luis Potosí when he was murdered by banditti.

COMORIN, Cape. See Cape Comorin.

COMORN, or **Komorn** (Hun., *Komárom*). **I.** A county of Hungary, on both sides of the Danube, and watered by its affluents the Waag and the Neutra; area, 1,145 sq. m.; pop. in 1870, 143,090, almost all Magyars. It is level and exceedingly fertile in its northern portions; the southern are hilly or mountainous. The district around Neszmély, near the S. bank of the Danube, produces the excellent wine of that name. Among the principal towns is Dotis (Hun. *Tata*). **II.** A fortified town, capital of the county, situated on the eastern extremity of the island of Schütt, at the junction of the Danube and the Waag, 85 m. S. E. of Vienna; pop. in 1870, 12,256. Among the principal buildings are four Roman Catholic and two Protestant churches, a Greek church, and a synagogue. The town contains several learned and charitable institutions, a cannon foundery, and a manufactory of firearms. The fortress, defended by extensive works on both sides of the Danube, was founded by Matthias Corvinus in the second half of the 15th century, and has been rendered one of the strongest places in the world by the additional fortifications erected since 1805. Its impregnability was tested in the revolution of 1848–'9, when it withstood a long siege and bombardment under Mack, Guyon, and Klapka, and finally came into the possession of the Austrians by a voluntary capitulation (Sept. 27, 1849). The treasury of the national bank was deposited here when the Prussians threatened Vienna in 1866.

COMORO ISLES, or **Comoros,** a group of high volcanic islands in the Mozambique channel, between Africa and the N. W. coast of Madagascar, consisting of the islands of Angaziya or Great Comoro, Anzooan or Johanna, Mayotta, and Mohilla, lying between lat. 11° and 13° S., and lon. 43° and 45° 30′ E.; area, 1,050 sq. m.; pop. estimated at from 50,000 to 80,000. They are fertile in most of the productions of the tropics. The rivers abound in fish, and vast herds of cattle range the meadows. Cocoanuts, cocoanut oil, and tortoise shell are the chief exports. Sugar has recently been cultivated with success, and now forms an article of export. The inhabitants are Arabs and negroes, who generally profess Mohammedanism, but fetishism is practised to some extent. Coarse cloths, jewelry, and firearms are manufactured. The Comoros are governed by sultans, one of whom resides in nearly every town. The island of Mayotta was ceded to France in 1841, and the cession was confirmed in 1845. Comoro, the largest island, is 30 m. long and 12 m. broad. It has a large town on the E. side, but is seldom visited by Europeans, and contains no spring water. The drink of the inhabitants is the milk of the cocoanut.

COMPARATIVE ANATOMY, the science which treats of the structure and relations of organs in the various branches of the animal kingdom, without a knowledge of which it is impossible to understand the beautifully progressive development of organization; necessary even for the full comprehension of the uses of many parts of the human body, which, apparently

rudimentary and useless in man, are highly developed in other animals. This science is also the basis of physiology and the natural classification of animals. On a subject so vast as this, comprehending the whole range of animal life, it will be impossible here to give anything but a sketch; selecting a few only of the more important functions, instead of attempting an exhaustive treatment of the science. In order to simplify the subject, and to make this article especially referable to human anatomy, the whole division of the invertebrata will be left out, for consideration under its separate branches and classes.—*Skeleton.* In the vertebrata, the most striking character is the great preponderance of the nervous system, which impresses peculiar forms on the skeleton, and corresponding arrangements on the vital organs; everything in their structure seems destined for the protection and suitable exercise of the nervous system; this is less observable in the lower forms, but in all the nervous centres are largely increased and collected together, compared with the invertebrata, and the principal portions enclosed in the bony canal of the spine and skull, to which the limbs with their muscles are attached; their bony fabric, therefore, is properly called neuroskeleton, to distinguish it from the external or dermoskeleton of invertebrates, the former having a basis of phosphate of lime, the latter chiefly of carbonate of lime. In the lowest vertebrates, as in eels among fishes, and serpents among reptiles, the spinal column and its cranial continuation constitute the principal and essential parts of the skeleton, the development of limbs being secondary; the skull is composed of the same elements as the spine, enclosing the cephalic ganglia and protecting the organs of special sense. The vertebral column is the first rudiment of the skeleton in the human embryo. The bones of fishes are comparatively soft, flexible, and elastic, in the lowest species without division into vertebræ, and in the sharks and rays cartilaginous, resembling the embryonic conditions of higher animals. Having no weight to support from the density of the medium in which they live, and being forced only to propel themselves through the water, which is effected by the lateral movements of the spine, the vertebræ are very numerous, and united by biconcave surfaces enclosing a gelatinous substance which admits of easy motion of one bone on another when the vertically flattened tail strikes the water; in aquatic mammals, as the whales, the tail is flattened horizontally to enable them to rise to the surface to breathe air, which distinguishes them from fishes. The number of vertebræ varies from 25 in *uranoscopus* to more than 200 in sharks, and some are said to have only 13. The lateral surface of the fish is extended by large spinous processes and fin rays on the back, or what may be called the dorsal or abdominal vertebræ, and to these are attached also the ribs when any are present; those which have spines below are called caudal vertebræ, the last being triangular and flattened to support the fin rays of the tail; the dorsal and abdominal fins move only with the spine. Though requiring no chest for respiratory organs, many fishes have ribs, and a few a rudimentary sternum. The cranium in the cartilaginous fishes is very simple, but in the osseous tribes is composed of a great number of pieces whose homologies are not always well determined; the brain cavity forms but a small part of the head, and its component bones are easily recognized as direct continuations of the vertebræ; the bones are thin and united by squamous sutures, which favors extension during growth; the lower jaw and operculum are supported on each side by a series of bones resembling the os quadratum of birds; the hyoid bone is greatly developed, supporting the branchial arches and organs of respiration. The pectoral fins represent the anterior extremities and the ventrals the posterior; the latter are frequently absent; the former are attached to an osseous scapular arch, articulated to the skull; to this are attached an arm, forearm, and numerous carpal or wrist bones, from which the fin rays or fingers spring; the arm remains within the body, only the hand being external, consisting of a large number of fingers with many joints; no animal above fishes has more than five fingers, and some have only one (the middle finger), as the horse. The pectorals of the skates are wing-like, surrounding and even projecting in advance of the head; in the flying fishes they are so long that they serve for a species of flight; they vary in position, being sometimes under the throat and sometimes behind the ventrals; in a few species they are wanting. The posterior limbs, or ventral fins, are not articulated to the spine and do not form a bony arch as in the shoulder, but are suspended to the rib-like iliac bones at a distance between the head and anus varying in different families; in the jugular and thoracic fishes the bones supporting the ventral fins are attached to the arch which sustains the pectorals; there are small bones between the pelvic and the fin rays, which, if any, must represent the femur, tibia, fibula, and tarsus of the higher animals. A singular peculiarity in the skeleton of fishes is its want of symmetry in some genera; in the soles (*pleuronectes*) and flounders (*platessa*), one side is turned upward instead of the back, both eyes are placed on the same side, and the cranial bones are distorted to allow this arrangement of the organs. In most osseous fishes there are many small forked bones interspersed among the muscles, having no connection with the skeleton, serving as points of support to the muscles.—In the amphibia, which constitute a class of animals intermediate between fishes and true reptiles, there is an extraordinary difference of external form and internal structure during the metamorphosis which most of them undergo. In all, the spine con-

sists of dorsal, sacral, and caudal portions; in the frog there are only 8 or 9 vertebræ, in some of the salamanders more than 40, and in the siren 80 or 90; in the higher forms the vertebræ have no ribs, but long transverse processes, and are united by a ball-and-socket joint, with anterior concavity and posterior convexity; in the tadpole and perennibranchiate genera the spine is like that of fishes; in the frog, destitute of a tail, there is no coccyx, but in the salamander the coccygeal vertebræ are as numerous as those of the trunk, forming a powerful swimming organ. The bones of the skull are less numerous and more united than those of fishes; the brain cavity is very small, and the facial bones much developed transversely; the os hyoides undergoes remarkable changes according to the persistence of the branchiæ, as detailed in the article Amphibia; the tailed genera have cartilaginous appendages to the transverse processes, like rudimentary ribs. The scapular arch is well developed, consisting of the usual three bones, which unite to form the glenoid cavity, and in most genera has a distinct breast bone extending beyond the chest both anteriorly and posteriorly; the bones of the arm, forearm, and hand are easily recognized. The posterior extremities in the leaping batrachians consist of a long and cylindrical femur, a tibia and fibula consolidated into one bone, a tarsus and long metatarsus, and five toes; in the aquatic species the limbs are small and feeble, in some rudimentary, or even wanting, the powerful tail serving for rapid locomotion.—In serpents the skeleton is little more than a vertebral column and its ribs; there are no limbs (only the merest rudiments in some), and the motions of creeping, climbing, swimming, and springing are performed entirely by means of the flexible spine and the very numerous ribs; the number of the vertebræ is greater than in any other animals, being sometimes over 300, and their arrangement by ball-and-socket joints allows of very free lateral motion; the ribs, upon which they creep as upon so many feet, like an articulate, extend from the head to the anus, and are attached to no sternum; the bones of the head are very numerous, and movable upon each other; the brain cavity is small. Snakes may be distinguished from lizards without feet by the separate movements of the two halves of the jaws, which allow the remarkable expansion of the mouth necessary to swallow their large prey. In lizards the skeleton is more perfect; in them are seen for the first time cervical vertebræ; they have also distinct dorsals, bearing ribs, lumbar, sacral, and caudal vertebræ, articulated by ball-and-socket joints; also a sternum, scapular and pelvic arch, with very distinct and normally divided limbs in most genera; they have what have been called cervical and abdominal ribs before and behind the true ribs, and the sternum is prolonged nearly to the pubis, giving origin to cartilaginous arches supporting the abdominal viscera, of which the homologues in man are the lineæ transversæ of the rectus abdominis muscles. In the flying dragon, a small lizard, the ribs are elongated and covered with a thin membrane, by means of which the animal sails, like the flying squirrel, from one point to another below, using this membranous expansion as a parachute. In the fossil pterodactyl, a flying lizard, there is a remarkable elongation of one of the anterior fingers, which supports a flying membrane similar to that of the bat. In the rhizodonts, including the crocodiles and the large extinct fossil genera, the skeleton is still further developed, approaching more nearly to the mammalian type, especially in the extremities. The bones of the cranium are firmly united to each other, and there is no lateral movement of the jaws, as in snakes; the brain cavity is small; the whole number of vertebræ is decidedly less, and locomotion is proportionally performed by the feet, though the tail in the aquatic genera is still largely developed and very muscular. In tortoises, the highest reptiles, it would be difficult at first sight to recognize the usual structure of the class, but a closer examination betrays no essential difference. The spine consists of 7 or 8 cervical vertebræ, 8 to 14 dorsal, 3 sacral, and 20 to 30 caudal; the broad flat bones under the scales are a series of ribs, as may be seen by examining their connection with the spine from the inside, and the lower cuirass or plastron is a series of sternal bones, in which the ends of the ribs unite; the aquatic species have these ribs united only in the portions nearest to the spine; this immovable box of ribs and sternum, overlaid with the scales of the dermoskeleton, is admirably adapted to resist pressure. The bones of the skull are firmly united, and form large cavities and fossæ for the protection of the muscles of the jaws; the brain cavity is still small. The anterior limbs are attached to the inside of the chest; the scapula below the viscera, and close to the plastron, is united to the collar bone by suture; the humerus is arched and twisted, the forearm short, broad, and permanently pronated; three rows of carpal bones, metacarpus, and phalanges. In the pelvic arch the ilium and the pubis seem to change places, the latter being broad and flat, and uniting below with the ischium, while the former is long and narrow, and projects backward, the whole pelvis being movable on the spine; the femur presents a trochanter, and has quite a mammalian aspect; the bones of the leg are separate, and nearly equal; the aquatic species have longer and more slender limbs.—In birds the number of vertebræ is quite variable in the different regions of the spine; in the neck, according to Cuvier, from 23 in the swan to 9 in the sparrow; in the back, from 11 in the cassowary and swan to 6 in the bullfinch; in the sacrum, from 20 in the ostrich to 7 in the coot; in the tail, from 9 to 5; these proportions being connected with the habits of the species. Though so very different from the

lower classes, birds differ from each other only slightly in their skeletons; the bones of the neck, back, chest, and extremities are remarkably similar in all; they vary chiefly in the shape and size of their bills, the form of the feet, and the proportions of their bodies. Their bones are white, compact, fragile, and hollow for the introduction of air. The cervical vertebræ are the most numerous; their bodies lock into each other so as to allow a forward motion in the upper and lower ones, and a backward motion in the middle ones; the transverse processes are long, and have rudimentary ribs, especially developed in birds of prey. The bodies of the dorsal vertebræ are short and compressed laterally, and have large transverse processes; they are generally immovable in birds of powerful flight. The sacral vertebræ are firmly united together, and with the pelvis, in order to give support to the superior parts of the body in flight, and a sufficient base for the lower extremities. The bones of the tail are broad and short, penetrated by the spinal cord except the last, which is compressed, supporting the tail feathers and an oil gland. The skull is united into a single box at an early period; the brain cavity is very much larger than in the reptiles and fishes, and is occupied fully by the nervous centre; the brain of a sparrow is 100 times greater than that of a large marine turtle, in proportion to the size of the animals. The most striking characteristic of the class of birds is that the anterior and posterior extremities are entirely dissimilar in appearance and function, though the anatomical structure of the wings and legs is the same. The perfect condition of the chest indicates the energy of the respiratory system, and the consequent muscular activity. The ribs are strong, attached to the sternum in front by bony continuations instead of elastic cartilages, movable only at each end, articulated to the sides of the vertebræ in the flyers, but to the intervertebral cartilages in the runners; in those which require great solidity of the chest for powerful flight, each rib is strengthened by bony splints running obliquely upward and backward to the succeeding bone, to which it is attached by strong ligaments. The sternum is provided with a keel or crest in front for the attachment of the muscles of the wings, large in proportion to the flying power; in the ostrich, which does not use its wings to rise in the air, this bone is flat as in man; in some aquatic birds the breast bone contains several convolutions of the windpipe within its cavity. The shoulder blade is parallel to the spine, long and narrow, at the glenoid cavity articulating with the clavicles and coracoid bones. The coracoid bones, or posterior clavicles, are strong, extending from the glenoid cavity to a transverse groove in the anterior portion of the sternum; these are called the collar bones by some of the older authors. The true clavicles, the "merrythought" or "wishbone," vary considerably in size, being sometimes quite rudimentary, and in other species strong arches reaching the sternum. The wing consists of a humerus, radius, and ulna, carpus and metacarpus of two bones each, a small single-jointed ulnar finger, a two-jointed radial finger, and a rudimentary thumb. Prof. J. Wyman has shown in the *anas acuta*, or pin-tailed duck, an arrangement of the bones and ligaments by which all the segments of the extended wing are retained in a fixed position independently of muscular action, and the flexion or extension of the hand on the forearm when the latter is flexed or extended on the arm; during flexion and extension the radius advances and recedes upon the ulna, carrying with it the upper bone of the carpus, and with this last the hand; when the upper carpal bone, to which the lower is attached firmly, is drawn over the end of the ulna as the radius recedes, the lower is drawn up between the hand and the end of the ulna, maintaining the hand extended, like a wedge, until it is displaced by the reversed action of the radius. ("Proceedings of the Boston Society of Natural History," vol. v., p. 169.) In the lower extremity the iliac bones correspond to the shoulder, the thigh bone to the arm, the leg to the forearm, and the foot to the hand. Though one be covered with feathers and the other bare, the wings and legs present the same analogies that may be traced between the fore and hind legs in all the vertebrata.—*Form.* In the mammalia, or animals bringing forth living young and nourishing them with milk, there is a great variety of form. Man, the horse, the whale, the seal, and the bat, notwithstanding their dissimilar external appearance, exhibit in their skeletons and internal structure homologies which show that they belong to the same class; the whale is nearer to man than to the fish, and the bat is more human than bird-like. The form of the skull varies much in mammals, according to the development of the brain cavity, and the proportions of the face. A direct relation is found to exist between the size of the cranium and face and the intelligence of an animal. In man the cranium, or brain cavity, is directly over the face; and in proportion as the former retreats behind the latter, and as the face is prolonged forward, the animal propensities preponderate over the intelligence. The differences between human crania in this respect early attracted the attention of anatomists, and Camper measured them by what is called the facial angle; this is formed between a line drawn horizontally from the opening of the ear to the upper teeth, and a line drawn vertically from the forehead to the same incisors. In the white races this angle is from 85° to 80°, thence decreasing in the other races as low as 65°. In some of the antique statues this angle is made 90° and in one case 100°, which last never existed unless in disease. In children, the forehead is more prominent than in adults, and their facial angle is usually 90°; this explains their generally pleasing countenances as well

as the diminution of their innocent beauty as age advances. Those animals which have the lowest heads and the longest snouts are always considered the most stupid and gluttonous, as the hog among quadrupeds; as we descend to reptiles and fishes, it has been seen that the jaws constitute almost all the head, and these are known to be the most voracious of creatures, apparently living only to eat; on the contrary, a great degree of intelligence is attributed to the elephant from his well marked forehead, and the perpendicular-visaged owl is made the companion of the goddess of wisdom; though in the last instance these semblances do not depend on any greater development of brain, but are mere bony expansions. Even among men, we instinctively regard him as stupid and sensual whose face is very prominent and whose forehead is receding; the advancement of the forehead toward the line of the face is always understood by artists as representing a noble and elevated character. As we recede from man the brain cavity diminishes, the jaws and nasal fossæ are lengthened, the orbits are directed more externally and are less distinct from the temporal fossæ; the occipital foramen and its two condyles gradually fall behind the middle of the base of the skull, and finally occupy its posterior face, so that the jaws, instead of being at right angles to the spine, become parallel to the axis of the body. The eight cranial bones of man may be recognized in the mammal skull, though they are variously subdivided in the different families, and in some are united together; the two parietals are united in the carnivora, while the frontals remain separate, and the temporal tympanum is divided from the rest of the bone by a suture; in the elephant the frontals and parietals are early united with the other bones into a solid box. Though the skull of the highest apes resembles that of man in shape, the bones are differently connected; the wing of the sphenoid does not reach the parietal and barely touches the frontal, and the temporal suture is serrated rather than squamous. From the position of the occipital foramen it is evident that the head of mammals is not balanced on the spine, but is suspended from the neck and back by the ligamentum nuchæ. The bones of the face differ from the human in the greater number of pieces and in their horizontal extent. In man the upper jaw bones contain all the upper teeth; but in the lower animals the incisors are contained in an intermediate bone, the intermaxillary, a persistence of a separation which may be detected in the human fœtus. The palate bones are small in the carnivora, and large in the rodents; the upper jaw is elongated in all. The peculiarities of the bones forming the orbits will be given under the heads of the different families. No animal but man has a chin; in all below him the anterior arch of the lower jaw is convex vertically and retreating at its lower margin; in the whale it resembles two immense ribs, united at the points, without any ascending branches, the articular surface being directed backward; in the hare and rabbit the coronoid process, to which the elevating muscles are attached, is small, but in the squirrel and rat it is large, and the condyle or articular process is compressed laterally and largest in front; in carnivora the condyle is transverse, and admits only of a hinge-like movement; in the ruminants the flat articular surface allows considerable lateral motion; in cetacea and edentata there is neither ascending ramus nor coronoid process, and the angle formed by the body and ramus is gradually reduced until it becomes on a line with the axis of the jaw; in carnivora, rodents, and ruminants, the two sides of the lower jaw are never firmly united at the symphysis. Many mammals have the head surmounted with horns; that of the rhinoceros belongs to the skin, and is only an assemblage of closely united hairs, but the horns of ruminants have a bony axis springing from the frontal bone. The bony prominence in the giraffe is covered by the skin permanently; in the stags the bony core is at first under the skin, but soon becomes exposed, and after a certain time falls off, to give place to another similar growth; in the ox, sheep, goat, and antelope, the osseous axis grows during life, and never falls, being covered by a sheet of horn, growing by layers; these bony cores generally communicate with the frontal sinuses, and thus receive air into their interior. The species with falling horns have generally only the males thus armed; the reindeer, however, is an exception. The comparative anatomy of the brain has been sufficiently given under the title Brain.—*Nervous System.* The vertebrate nervous system is not homologous with the invertebrate; the spinal cord of the former is enclosed in a vertebral canal, and its vesicular substance is continuous throughout, while the ganglionic chain of the latter is always in the general cavity with the viscera, forms a ring through which the œsophagus passes, and its vesicular substance is frequently interrupted. Though the vertebrate spinal cord cannot be considered as a chain of ganglia, it may be regarded as a series of segments arranged in a linear direction, having a distinct enlargement in many animals at the origin of the spinal nerves, and particularly of those sent to the extremities. The spinal cord of fishes terminates near the end of the spine. Owen says that in typical fishes it gradually tapers to a point in the heterocercal or unequal-tailed species, but swells again into a terminal ganglion in most equal-tailed species; in describing that of the angler (*lophius*), he has evidently fallen into an error in regard to its length, as shown by the researches of Prof. J. Wyman (see "Proceedings of the Boston Society of Natural History," vol. iv., pp. 150, 151); the latter found the cord extending as usual quite near to the tail, where it ended in a ganglion, presenting the striking peculiarity of being sheathed

in a great part of its extent by an immense number of bundles of nervous fibres, of a vastly greater bulk than the cord they surrounded. Where the pectoral fins are much developed, as in the rays and flying fishes, the cord is enlarged at the origins of the nerves; in the torpedo and electrical eel, nerves are freely distributed upon the thin membranous laminæ which constitute the electric apparatus, and act as conductors, if not as generators, of this force. The cord is composed of an external white or tubular portion, and an internal gray or vesicular matter, the reverse being the arrangement in the brain. In the *amphioxus*, the simplest vertebrate, the cord, with its nerves on each side, forms the whole nervous system; but in fishes generally the cerebral ganglia, with the nerves of special sense, constitute a distinct brain. The olfactory lobes, by some considered the representatives of the cerebral hemispheres in man, from which the nerves of smell arise, are well developed, and in the sharks are four instead of two, the usual number. The optic lobes, behind these, homologous with the tubercula quadrigemina, are larger than the other parts of the brain, and are in proportion to the development of the optic nerves which arise from them and the perfection of the sense of sight. In the blind fish of the Mammoth cave of Kentucky (*amblyopsis spelæus*), in which the eyes are rudimentary, there appears to be an exception to this law; though he could detect no optic nerves, Prof. Wyman found the optic lobes of good size, though less than in the allied fishes. Between the olfactory and optic lobes are the true cerebral hemispheres, largest in the sharks; behind the optic lobes is the cerebellum, which comparative anatomy shows to preside over the coördination of the movements, largest in the active sharks. In the perennibranchiate amphibia the brain and nervous system are very much like those of fishes; in the genera which undergo metamorphosis the changes from the fish-like to the reptilian brain are rapid and remarkable, the hemispheres becoming enlarged and the spinal cord shorter as the tail disappears. In frogs, there are found attached to each spinal nerve, before the division into sensory and motor roots, vesicles containing a white, chalky, crystalline substance; from their constant presence, they are considered essential parts of the nervous system; nervous filaments have been traced into the interior of these vesicles; the chalky matter resembles that found in the vestibule of the ear. In true reptiles the brain is more developed and nearly fills the cranial cavity; the hemispheres are increased in size, and the cerebellum is large in proportion to the activity and complexity of the movements; the nerves are large compared with the centres, and the sympathetic system is more closely connected with the blood vessels. In birds the parts of the brain are no longer on the same plane, are larger, more complicated, indicating more intelligence and more activity. In the spinal cord there is an enlargement where the nerves are given off to the wings, and another where those of the legs take their origin; that these are not proportional to muscular force, but rather to sensibility, is shown by the fact that the latter is the larger; though the wings are more muscular, they are, from their feather covering, less sensitive to external impressions than the legs; this is more clearly shown in the mammalian bat, where the enlargement corresponding to the exceedingly sensitive wings is by far the greatest. In mammals the cerebral and cerebellar hemispheres reach their highest development, the former gradually covering over the latter, and the convolutions becoming more numerous and complicated up to man; the commissures more intimately connect their different portions; the spinal cord is larger in proportion to the size of the body, but smaller when compared with the brain; and the sympathetic system is more extensively distributed.— *Organs of Special Sense.* By means of the organs of special sense, placed at the extremities of the cerebro-spinal nerves, and generally near the entrance of the alimentary canal, animals are brought into relation with external objects; an impression communicated to the outer surface is transmitted to the sensorium along the sensory fibres of nerves, and there causes the phenomena of smell, vision, taste, hearing, or general sensation, with their resultant motor acts from the transmission of the nervous influence along the motor fibres; in all the vertebrates there are organs set apart for this purpose, the nose, the eyes, the ears, the tongue, and the skin. The sense of touch, residing in the skin, is the most universally diffused, and is capable of answering most practical purposes of the other special organs; and indeed the senses of taste and hearing seem to be little else than modifications of the sense of touch; the senses of smell and vision depend upon the influence of such delicate changes in the surrounding air that we can hardly comprehend them except through their effects. The skin consists essentially of two layers, the cuticle and the true skin; the surface of the latter is the seat of sensibility, and is provided with numerous papillæ into which the nervous loops enter; the cuticle is made up of nucleated cells, becoming dry externally and falling off in the form of thin flakes. In fishes the body is generally covered with scales, not fit for receiving tactile impressions; some of the siluroids, as the horn-pout, have fleshy barbels attached to the lips, into which nervous filaments may be traced; their skin is lubricated with a viscid mucus poured out through numerous tubes. In the amphibia the skin is soft and yielding, and quite sensitive; it is well known to be in this class an important accessory organ of respiration. In serpents and lizards the tongue and the tail are the principal organs of touch. In birds the tactile organs are the bill, the cere, and vari-

ous appendages in the shape of combs, wattles, bristly hairs, and caruncles; in the swimmers and waders the bills are very sensitive; in the snipe and woodcock, for example, the fifth pair of nerves is freely distributed to the long bill, making it an exceedingly delicate organ for the explorations necessary in their search for food. In mammals, most of which are covered with hair or thick hides, the sense of touch is most acute in the neighborhood of the mouth; the lips of the horse are very sensitive; those of the carnivora and rodents are provided with long whiskers, into which nerves enter, forming exquisite organs of touch; the complicated appendages to the nose of bats, and also their delicate wings, are very sensitive tactile organs. With the exception of the tongue, which is sensitive in all, there is no approach to the perfect development of touch in the human subject until we reach the quadrumana, in which the hand is the chief tactile organ. The fore foot of the ruminant, ending in a hoof, serves only for support and locomotion; in the feline tribes it is in addition prehensile, and to a certain extent tactile; in the monkey the palmar cuticle is thin and sensitive, though the hand is still used in locomotion; in man the sense of touch is very acute in the tips of the fingers, though all parts of the skin are more or less sensitive. The sense of touch may be educated to a degree almost substitutive for the sense of sight; what the bat's wing is naturally, the blind man's fingers may become by education. The sense of taste, even in man, must be considered as principally a modification of the sense of touch; as it is impossible to draw the line between the mucous membrane and the skin, which are also composed of the same elements, and as the sensory branches of the same fifth nerve are distributed to the face, lips, mouth, and tongue, it is naturally inferred that a great part of what is called taste is really touch, applied to a special locality for special purposes, as in the wing of the bat and the tips of the fingers; and some are of opinion that the sense of smell supplies all of taste which is not derived from touch. The papillæ of the tongue are more highly developed than those of the skin, and are scattered over its surface in all parts likely to come in contact with matters in a state of solution. The tongue of fishes can rarely be an organ of taste, being of a hard consistence, and frequently armed with teeth; their voracity and the element in which they live are also against their possessing in the tongue anything more than an organ of touch. In all the vertebrates the tongue answers for other purposes than that of taste; in the toad it is darted with great quickness and usually unerring aim against the insects upon which it feeds; in the chameleon it is capable of considerable protrusion, enlarged at the end, and covered with a glutinous secretion which entraps its insect prey when projected against them. In birds it is chiefly an organ of prehension, rarely possessing papillæ, and generally sheathed in front with horn; the tongue of the woodpecker is a kind of barbed spear, protruded by a muscle and long bony tendon from the top of the head, for the transfixion of grubs and insects. In mammals generally the tongue is only an organ of taste; but in the giraffe it forms a long flexible process, which can take up small bodies almost like a hand, and by which the leaves of high trees are stripped off into the mouth; the tongue of the ant-eater is covered with a viscid secretion, to which the ants adhere in great numbers; in the cats it is beset with strong spines for purposes of prehension and of tearing the small fibres of the flesh on which they feed; in man it is also of the first importance in the articulation of words.—The sense of smell doubtless exists in many invertebrates, at the entrance of the respiratory passages. In fishes the organ of smell consists of a sac containing a folded membrane largely supplied with nerves, and not communicating with the mouth or pharynx; that this sense is acute in the cod and other deep swimmers is probable from the fact, well known to fishermen, that these may be attracted from great distances by peculiar kinds of bait, while the top-water and mid-water species select their food by the sight, also often showing what seems to be a decided sense of taste; the sharks, from their large olfactory nervous centres, are believed to have an acute sense of smell. In the higher amphibia the nostrils become reptilian, being partly osseous and opening into the anterior part of the mouth; in saurians and chelonians the nostrils open posteriorly into the pharynx. In birds the external nostrils vary much in size, shape, and situation, but are generally freely open; their sense of smell is not so acute as had been supposed from some of the habits of the vultures, as Audubon has satisfactorily shown that these birds detect their carrion prey from great heights by the sense of sight and not by that of smell. In mammals the olfactory lobes are much more fully developed than in man, as also are the nasal cavities in which the sensitive membrane is spread out, and the external nose; the nostrils are valvular in the cetaceans, beavers, seals, &c.; in the hog the nose is enlarged into a gristly ring, in the tapir into a short proboscis, and in the elephant into a long prehensile trunk. The sense of smell is most acute in the carnivora and ruminants, as would be expected from the extent and convolutions of the turbinated bones. From the communication of the nose with the pharynx, mammals are able to breathe with the mouth shut.—An organ of hearing may be detected in many invertebrates, as in the lobster, insects, and cephalopods. Its simplest form in the vertebrates is in fishes, where it is a sac filled with fluid, in which are distributed the nervous filaments on small particles of calcareous matter; in connection with this sac are two or three semicircular canals opening

into its cavity; the auditory nerve arises from the side of the spinal bulb, without any distinct ganglion; in such an ear as this the vibrations of the water are communicated to the skin, then to the fluid, and finally to the nerves. Sonorous impressions are conveyed with greater intensity in liquids than in air, so that the sense of hearing in fishes may be tolerably acute. In the sharks the semicircular canals are quite large, and the vestibule of the *carcharias obscurus* would contain the whole internal human ear; of course in such an organ there is no tympanic cavity, and no external ear. In the aquatic amphibia the organ of hearing is like that of fishes; but in the frog and salamander there is a membrane of the tympanum. In the reptiles there is added a cochlea with its own nervous filaments, the tympanic cavity is larger, and a bone, the *columella*, makes a communication between the vibrating membrane and the fluid of the auditory sac; a Eustachian tube communicates also with the throat, and the tympanum is either bare on the level of the skin or just underneath it. In birds there is no external cartilaginous auricle, as in mammals, and only a portion of the external auditory canal; but in many, especially in the rapacious families, the feathers are erectile around the meatus, and arranged to catch distant sounds; the bone-surrounded tympanum has also its columella, and its cavity communicates with the fauces by a Eustachian tube, and with the air cells of the skull; the cochlea is more developed than in reptiles, but, like the rest of the internal ear, does not reach the perfection of the mammalian type. In the owl there is a crescentic valvular fold of integument around the external ear. In mammals there is a perfect cochlea, a chain of three tympanic bones, an external canal, and an external movable ear; in cetaceans and other aquatic families, the external ear is either wanting, very small, or provided with a valve; in ruminants and the timid rodents it is large and directed backward; in the carnivora it is small and inclined forward. The use of the external ear in man is not exactly determined; its small size and direction would make it of but little use in collecting sounds and transmitting them to the tympanum. The experiments of Savart go to show that it acts not only in reflecting sounds, but as a conductor, by virtue of the elasticity of its cartilage. In general the ear of mammals resembles that of man. In all animals living in air the vibrations of sonorous bodies are transmitted to a tense membrane, the *tympanum* or drum; the tympanic vibrations are transmitted to the fluid of the internal ear, in which the nerve floats, by the chain of bones; and in order that the membrane may vibrate freely, the cavity of the tympanum communicates with the throat, the tension being equal on both sides.—The most complicated of the organs of special sense is the eye. In all vertebrates the eyes are two in number, and with few exceptions symmetrically arranged on the sides of the head; they are essentially on the same general plan, the differences being chiefly in relation to the density of the medium in which the animals reside. Aquatic animals, whether fishes, reptiles, birds, or mammals, have the lens nearly spherical to compensate for the similarity of the densities of the humors of the eye and the surrounding water. In fishes the eyes are generally large and on the sides of the head, though they are small in the eel, directed upward in *uranoscopus*, and both on one side in the flounder; the cornea flattened, the sclerotic thick and sometimes partly ossified, the pupil large and round, the lids rudimentary, and the lachrymal gland wanting. The blind fish (*amblyopsis*) has been found to possess a sclerotic and choroid coat, a layer of cells beneath the latter resembling a retina, a rudimentary lens, and a nerve; still there is no trace of eye dots on the skin, though such were found in the mass of areolar tissue occupying the usual situation of the orbit; such an eye cannot be regarded as an organ of vision, as the skin and tissues beneath prevent the passage of light except in a very faint degree; but such as it is, it corresponds to the vertebrate, and not to the invertebrate eye, with the last of which it has been sometimes compared; the deficiency of vision in this species is made up by the largely developed organ of hearing, and by the remarkably sensitive papillæ on the head supplied by the fifth pair of nerves. In the aquatic amphibia the eyes are like those of fishes; in the higher genera, and in reptiles, except ophidians, there are lids moving vertically, a lachrymal apparatus, and a movable iris; in the snakes there are no lids, but the skin passes directly over the cornea, as in the eel. In birds the eyes are always well developed; from the anterior convexity and lateral location, their sphere of vision is very extensive; the retina is quite thick, and apparently gives origin to a fan-shaped dark membrane, the *pecten plicatum*, which extends from the entrance of the optic nerve toward the lens; from its being composed chiefly of vessels, some think it a process of the choroid, and accordingly its use may be either to absorb superabundant rays of light to extend the visual surface, or perhaps, as Owen has suggested, to push forward the lens by its erectile property. The pupil is round, the iris very contractile, the cornea large and transparent, and the sclerotic strengthened in front by a series of bony plates; there are two horizontal lids, the lower largest and most movable, and a third vertical nictitating membrane, semi-transparent, which may be drawn over the cornea from the internal angle; lachrymal glands are also present. There is some apparatus in the eyes of birds, either the pecten or the muscles, by which these organs can adapt themselves to the very different distances at which it is necessary for them to have distinct sight, by which the curvature of the lens and the focus of vision may be changed. In mammals which seek their food by night, the

eyes, like the ears, are proportionally larger than in the day feeders, and their pupil, when contracted, assumes the form of a vertical slit instead of a circular aperture; in the moles and subterranean species the eyes are extremely small, and sometimes quite rudimentary; in the aquatic genera the lens is more spherical, as in fishes, and in cetacea the lids are imperfectly developed and the whole organ comparatively small; in carnivora especially there is at the bottom of the eye a brilliant *tapetum*, which shines at night with metallic reflections; the lids are generally formed as in man, the upper being the largest and the most movable; except in man and monkeys, there is usually a third nictitating membrane. The direction of the eye in man and monkeys is forward; but as we descend in the scale it becomes lateral, so that the animal cannot see directly before him, and the sphere of vision becomes different for each eye.—*Organs of Alimentation and Digestion.* There is no organ so characteristic of the animal, as distinguished from the vegetable, as an internal digestive cavity for the conversion of organic substances into nutritive material. In the sac-like polyps the food is introduced into the simple stomach, and dissolved without any mechanical division; in the echinoderms there is a complicated apparatus of teeth, and the digestive cavity is arranged in a radiating manner; in the higher invertebrates and all the vertebrates there is a distinct mouth, an apparatus for mastication, a stomach for digestion, and an intestine from which the nutrient matters are absorbed and the useless materials are expelled. Accessory salivary, biliary, and pancreatic organs are found from the higher radiates up to man; in vertebrates the teeth are confined to the cavity of the mouth, and generally to the jaws, none being found in the stomach. Fish are very voracious, and most of them live upon animal food, swallowing whatever small prey they can obtain; a few have no teeth, but they are usually well provided with them, the sharks having several rows; the teeth are found not only in the jaws, but on the palate and vomer, the tongue, the branchial arches, and pharyngeal bones; they are numerous, without roots, united to the bone which supports them, deciduous and replaced by others growing under or by the side of the old ones, and thinly covered with enamel; the form is generally conical, as they serve only to retain or tear their food, rarely to crush and grind it; they are numerous and sharp in the pike and salmon, serrated in some sharks, flat and pavement-like in the rays, strong fangs in the wolf-fish, in others soft and velvety, tuberculated, or sharp-edged, and absent in the sturgeon and the sucking genera: to fit them better for their prehensile office, they are placed alternately, and not opposed to each other as in masticating animals. The salivary glands are absent, or very rudimentary; the gullet is short and wide, with its membrane folded longitudinally; the stomach varies in shape from globular to long and tapering, with both orifices near together and guarded by constrictor muscles; the intestine is short as in all carnivorous feeders, and not divided distinctly into large and small; to compensate for its shortness, the intestine in the sharks is provided with folds arranged in a spiral or longitudinal direction, which delay the passage of the food and greatly increase the absorbing surface; the anus varies in position from under the throat to the base of the tail. The liver is soft, light-colored, of large size, and many-lobed, discharging its bile into the commencement of the intestine, while the pancreas pours in its secretion on the other side; the latter organ is a large gland in the shark, but it is more commonly a series of tubes or cæcal appendages, the simplest form of a gland, placed around the pylorus; digestion is rapidly performed, and the chyle is taken up by numerous lacteals which end in the venous system near the heart. The spleen is small, of various forms, attached to the stomach, generally simple, but lobulated in the sharks. The amphibia resemble fishes in their digestive apparatus, in their prehensile teeth in the palate and jaws, in the absence or rudimentary condition of the salivary glands, in the short and wide gullet, narrow stomach, and short and simple intestine; in some of the higher forms they approach the reptiles, in the less numerous teeth, elongated tongue, and distinct small and large intestine. In snakes and saurians, mostly carnivorous, the intestinal canal is shorter than in the herbivorous testudinata. In serpents, which feed on living prey, the sharp conical teeth are directed backward, and the bones to which they are attached are freely movable, enabling them to swallow animals considerably larger than themselves; the venomous genera have in front of the teeth of the upper jaw two long curved fangs, communicating by a canal or a groove with the poison gland behind and below the orbit; the muscles which close the jaws press the venom into the wound made by the teeth; in the rattlesnake these fangs are movable, and may be bent backward in a fold of the gum when not in use; behind the ones actually employed, there are the rudiments of others which soon complete the terrible armature if one fang happens to get broken. The tongue is long, sheathed, and bifurcated; salivary glands are present; the gullet is long and very extensible; the stomach capacious, simple, and capable of great distention, separated from the intestine by a distinct valve; the duodenum receives the biliary and pancreatic secretions, and begins to present a villous surface; the large intestine is distinguishable from the small by its size, and ends in the cloaca with the ureters and genital openings; the liver, spleen, and pancreas are elongated to conform to the shape of the body. In the carnivorous saurians the arrangement is equally simple, though the teeth are fewer, chiefly in the jaws, the stomach short and rounder; in the iguana and other vegetable

feeders, the intestine is the longest. In testudinata, instead of teeth the jaws are armed with sharp edges of horn; the tongue and gullet are provided with long papillæ, sharp in the marine species; the salivary glands are tolerably developed; the gullet is long, wide, and muscular, and the stomach wide and fleshy; the intestine is about six times the length of the body, and the colon has a short, wide cæcum; the canal opens into a general cloaca. The food of birds is so various that their digestive apparatus would be expected to present considerable differences, and in no part is there greater variety than in the bill, which in most species is the principal organ of prehension, whether the food be seeds, insects, fish, or the flesh of animals. The bill furnishes to the zoölogist as good characters for the classification of birds as do the teeth for that of mammals; its exterior and the sharp edges are covered with solid horn, but it never has any true teeth, so that there is no proper mastication in this class; the birds of prey have the upper mandible short, strong, curved, and terminating in a sharp point, and in the falcons with a tooth-like process on each side, indicating by these characters the more or less carnivorous propensities of the genus; the tooth-billed hawks are the boldest, while the vultures, with their more elongated beaks, rarely attack living animals; in the parrots and granivorous birds it is broad and powerful to break hard shells and seeds; in aquatic genera it is broad for obtaining worms and insects from water and mud; in insect-eaters it is long and slender, or short and broad, according as the prey is taken on the wing or not, as in the bee-eater in the first case, and the whippoorwill in the second; it is long and straight in the king-fisher and heron for seizing small fish or reptiles; in the pelican the under mandible is provided with a large pouch for holding fish, and in the hornbill the upper is surmounted by a large and hollow casque. As the food does not undergo mastication in the mouth, the salivary glands are small; the gullet is wide and muscular, and capable of great distention in birds of prey; at the lower part of the neck it communicates with a membranous pouch, called the crop, in which the food undergoes a softening preparatory to stomachal digestion; the crop is largest in the granivorous birds, but it is found in the rapacious orders, though absent in the ostrich and the fish-eaters. Below this the gullet becomes smaller, but shortly dilates again into a second digestive cavity, or *proventriculus*, whose internal surface is studded with numerous follicles, generally of small size, sometimes hardly perceptible, but large in birds which have no crop; it secretes a fluid analogous to the gastric juice. This second stomach opens into a third, the gizzard, where chymification is completed, of variable size and structure; in carnivorous birds the gizzard is thin and membranous, while in the granivorous it is thick and muscular for compressing and crushing their hard food, performing the office of teeth; the lining membrane assumes a hard cartilaginous character, just as the skin of the palm and heel of man does; when circumstances favor or require it, mucous membrane may thus change into skin, as far as its dense cuticular layer is concerned; the power of the gizzard in the ostrich is enormous, wearing down the hardest substances; in gallinaceous birds its grinding action is assisted by the swallowing of pebbles, which serve the purpose of the gastric teeth of crustaceans and other invertebrates; the food of a bird may be known by the simple inspection of its gizzard, so close is the relation between its muscular power and the substances to be reduced by it. The intestine is much shorter than in most mammals, and consists of small and large, the latter having two tubular appendages, or *cæca*, at its junction with the former; these cæca are very small in the birds of prey, and largest in the gallinaceous order; the rectum is dilated near the anus, forming a *cloaca*, in which the ureters, oviducts, and male genitals end. The liver is large, filling a considerable part of the thorax and abdomen, usually two-lobed, with a gall bladder and hepatic ducts; the pancreas is long and narrow, lodged in the first convolution of the small intestine; the spleen is small, variously shaped, and situated beneath the liver.—The teeth are most perfectly developed in mammals, in which they serve not only for mastication, but for defence, attack, and locomotion. The structure of teeth presents three different substances: a central portion, forming the principal part of the bulk, characterized by minute canals radiating from the pulp cavity, the ivory or dentine; the enamel, investing the exterior and crown with a thin layer of extreme hardness; and the cementum, or *crusta petrosa*, covering the roots and sometimes around the crown with a thin lamina like bone. These three substances are well seen in the grinder of an elephant, in which the central part is made up of ivory, in a series of ridges covered with enamel, and this last, except on the surface, concealed by crusta petrosa; the hard enamel leaves a projecting grinding surface, while the other two substances are worn away. The teeth in vertebrates are shed at least once, and in some many times; those of fishes and reptiles are continually undergoing this process; in most fishes and snakes the teeth shed have between them others which remain attached to the jaw or the soft parts, until new ones are formed, to be shed in their turn; in some fishes, the crocodile, and most mammals, the new teeth are developed below the old, which they push out, after the roots are absorbed and the crown drops off; in the elephant and mastodon the new teeth are formed behind the old ones, gradually sliding forward as the latter are worn away. In man and in most mammals there are three kinds of teeth: the incisors, in front, with thin and cutting edges; the canines, conical, next to the incisors, four in number, in all animals except man longer than the other teeth,

destined to tear and to cut; and the molars or grinders, with a wide and irregular surface, for crushing and bruising the food. These different kinds of teeth are arranged in mammals according to the nature of their intended nourishment; and a simple inspection of the dentition indicates the kind of food, the habits, and even the structure of most animals. In the carnivora, or flesh-eaters, the canines are long, and the molars are compressed and sharp-edged, shutting like the blades of scissors; in the insect-eaters the molars are beset with conical points, meeting accurately in each other's interstices; in the fruit-eaters the surface of the molars is provided with rounded tubercles; in those which feed on hard grains, the grinding surface is flat and rough like a millstone; in the gnawing animals the incisors are greatly developed, and the enamel is so arranged that the wearing of the tooth keeps its edge sharp and chisel-shaped. Of these different forms of teeth the molars are the most constant and important, bearing the strictest relation to the habits of the animal. Between the carnivora and the herbivora, the flesh-eaters and the vegetable-feeders, stands man: he has all the kinds of teeth equally developed, of the same length, and in an uninterrupted series, and of course his natural food is a mixture of animal and vegetable substances; placed in unnatural circumstances and in extremes of heat and cold, the animal or the vegetable element must predominate for the preservation of health, according to latitude. Teeth are sometimes used wholly as weapons of attack or defence, as the long incisors or tusks of the mastodon and elephant; or as the single incisor of the narwhal, developed in the male, generally on the left side, into a long spirally twisted horn, that of the right side being rudimentary and concealed in the jaw, and both being rudimentary in the female. The tusks of the walrus serve also in locomotion, for pulling its unwieldy body up steep banks or blocks of ice. The teeth are wanting in the ant-eaters and pangolins; in the Greenland whale they are replaced by large, flexible, horny plates, called whalebone, in the upper jaw, the lower one having neither teeth nor plates; the upper incisors are wanting in ruminants, the lower in the walrus; the canines are absent in rodents, some ruminants, and most female solipeds; in the ornithorhynchus of New Holland the muzzle is prolonged into a wide, horny beak, flattened like that of a duck, and like it furnished with transverse lamellæ on the edges. The salivary glands are largest in herbivora. The gullet is wide and dilatable in carnivora, narrow in herbivora, and its fibres are arranged generally very much as in man.—The shape of the stomach varies much according to the food; it is usually simple, but multiple in the ruminants. The animal food of the carnivora requires a simple stomach and a short alimentary canal; in the quadrumana and less carnivorous families, where the food is more mixed, the organ becomes larger transversely; in the lion the intestine is not more than three times the length of the body, and in some others of the family it is difficult to distinguish the large from the small. In the ruminants the stomach consists of four distinct cavities: the first, or paunch, receives the crude, unmasticated food while the animal is grazing; this occupies a large part of the abdomen, especially on the left side; the second, or honeycomb, is small, on the right of the gullet and in front of the paunch, of which it seems a mere appendage; its mucous membrane presents the polygonal cellular structure noticed in tripe; the third, from its numerous folds, is called the manyplies; and the fourth, at the right of the last, the *abomasum* or rennet bag; this secretes the gastric juice, and is the proper digestive cavity. The first three stomachs communicate directly with the gullet, which opens almost equally into the first and second, and by a narrower canal into the third. It may appear strange that while the coarse food enters the first cavity, after it has been brought back to the mouth and masticated it should enter the third; the experiments of Flourens show that this is the necessary result of the anatomical disposition of the parts, as follows: the unchewed food, when it arrives at the part of the gullet which is continued in the form of a tube, mechanically separates its borders and falls into the paunch; but when drinks or fine semi-fluid substances present themselves, the canal is not dilated, and they naturally pass chiefly into the third cavity; it is consequently the occlusion or dilatation of this canal which determines the entrance of the food into the first or third stomach, and it is the volume of the substances swallowed which opens or not this canal. The act of regurgitation from the paunch to the mouth is supposed by some to commence in the second cavity, which seizes a portion of the alimentary mass, compresses it into a rounded form, and forces it into the gullet, by whose vermicular contractions it reaches the mouth; others believe, with Flourens, that the two stomachs force the mass into the œsophageal canal, which detaches a portion and forces it upward. Of these cavities the first is by far the largest, and the third the smallest; in early life the fourth is the only one developed for the reception of milk. In the camel and dromedary the paunch is fitted to receive large amounts of water in one of its compartments, the first answering to a paunch, and the second, the water cavity, to the honeycomb. As a general rule we find the stomach most complicated in herbivora, and the simplest in carnivora; yet there are many exceptions to this; for instance, in the horse, whose food differs but little from that of the ox, the stomach is simple; in some carnivorous cetaceans it is very complicated. The intestines are generally long, large, and sacculated in proportion to the vegetable nature of the food, but to this also

there are remarkable exceptions; in frugivorous mice they are only three times the length of the body, while in the carnivorous seal they are twenty-eight times, the anomaly being probably explicable by the greater development of the cæcum in the former. In the elephant the total length is about 60 feet, in the camel 130, in man from 25 to 30; the intestine is 10 times the length of the body in the horse, and 28 times in the sheep; in an ornithorhynchus 17½ inches long, the intestinal canal was 5⅔ feet, ending in a cloaca as in birds. The liver is large in cetacea, smaller in herbivora, and least in carnivora. There seems to be no general law for the presence or absence of the gall bladder; it is said that all the mammalia in which it is absent, except the porpoise, are vegetable-feeders. The spleen, pancreas, peritoneum, and other appendages of the digestive cavity, are much like those of man, from which they differ principally in shape; the biliary and pancreatic fluids are received into the duodenum. Absorption is effected in the lowest animals by simple membranous surfaces, without the aid of vessels or tubes; the latter are gradually added, and in man and the higher animals like cylindrical processes in immense numbers are developed in the intestinal mucous membrane, the *villi*, by which the nutrient materials are absorbed and conveyed into the circulation. In all vertebrates there are special vessels, the lacteals, in the coats of the intestine, for the absorption of chyle, which convey it to the thoracic duct, from which it is poured into the venous blood near the heart; in fishes they are destitute of complete valves, which exist in reptiles, and in both these classes their convoluted arrangement supplies the place of glands; the fluid contained is limpid in the fish and milky in the reptile; in birds, glands appear in connection with the lymphatics, but not with the lacteals, and the valves are more numerous and distinct; in mammals the chyle assumes more of the characters of blood, the valves are increased in number, the glands are numerous in the mesentery, and the thoracic duct becomes a distinct vessel, occasionally double.—*External Covering.* The skin of fishes is generally covered with scales, varying from rough grains to large flattened tubercles or thick plates, and thin lamellæ overlapping each other like the tiles on a roof; they are held by folds of the skin, very much like the nails, which they resemble except in being more calcareous. Carpenter considers the scales of fishes as developed in the dermis, and those of reptiles as mere epidermic appendages, like nails, hoofs, feathers, and hairs. They are ornamented with the most beautiful and varied colors, presenting all the metallic reflections. The most recent chemical researches have established that fish scales have the constitution and many of the peculiarities of structure and growth of bone; the arrangement of the lacunæ and their forms are of importance in studying the resemblances of allied fishes; they are composed chiefly of phosphate of lime, and contain a little magnesia and fluorine. The order of development of the scales in osseous fishes is not well ascertained; but in young garpikes (*lepidosteus*), according to Agassiz, a row of scales is first formed along the middle line of the body; as the age advances, other rows appear above and below the median line, and the scales are crowded together and of a rhomboidal form toward the tail; the same is true of the sturgeon and other ganoid fishes. From the study of fossil species, Agassiz was led to recognize and to classify fishes by the structure of the scales; he found that all living species resembling the ancient types had scales of a peculiar structure. A common scale is composed of successive layers of horny or bony matter, the oldest layer being the lowest; over this bony layer in fossil fishes is a covering of enamel-like substance as hard as that of the teeth; by this character the affinities of many modern species have been determined. The sharks and rays have scales which consist only of enamel, forming rough points, known in the former as shagreen; these he called placoids. Finding singular coincidences between the structure of scales and the general form and internal organization, he united the sharks and rays into one order, characterized by a cartilaginous skeleton, by a separation of the vertebral column from any upper or lower appendages, by teeth without sockets, attached to the jaw by skin and movable, and by the gills being covered only by strips of skin, forming as many openings on the sides or under part of the head as there are gills. The fishes whose scales are covered by enamel he called ganoids, embracing among living species the sturgeon and the garpike of North America, and among fossils some of the most remarkable forms, well described in the works of Hugh Miller; the scales in this order are extremely hard, and more or less smooth, and with the reptilian character of vertebræ united by ball-and-socket joint. These two orders were numerous at the remote geological epoch before reptiles, and consisted of many genera, with species of great size; the types of these ancient fishes are now reduced to a very few genera. These first created vertebrates he considers, in his "Essay on Classification," as classes of the animal kingdom distinct from fishes proper. In ordinary bony fishes he found two types of scales: in one they consisted of simple layers with regular outlines, and in the other the edges were serrated posteriorly, the serrations becoming more numerous and the surface more rough as the scales increased in size; the former he called cycloids, the latter ctenoids. Ctenoids have bony spines in the anterior portion of the dorsal fin, and serrations or spines in the opercular bones; this order includes the perch family, and others with spiny dorsals and rough scales; the flat fishes (*pleuronectes*), characterized by their

want of symmetry on the two sides, are an exception in having rough scales with soft fin rays. Cycloids, embracing fishes with smooth scales, like the cod, herring, trout, and eel, are the most numerous types in the present epoch; the rays are soft, and the bones of the head are smooth and simple; the mackerel has hard rays, and both serrated and smooth scales, and seems intermediate between cycloids and ctenoids. It appears, therefore, that this division into four orders according to scales is not perfect, and it is not now much insisted upon by its author, except for the first three. So intimate is the relation between the scales of fishes and their general organization, that Agassiz was enabled to restore a fossil fish from isolated scales, as is shown in his work on "Fossil Fishes;" in like manner Cuvier repeatedly restored fossil genera of mammals, giving the entire skeleton and outline of the form, from single bones found in the gypsum near Paris. In testudinata, the corneous integument is applied directly to the bony box which encloses their soft parts; the epidermis is covered with large scales, adherent by all their lower surface, except in the species which produces the tortoise shell of commerce, in which they overlap each other; these plates grow by all their adherent surface and at their circumference, as indicated by the concentric lines of increase, and become larger in proportion to the body; on the neck, tail, and limbs the epidermis is like that of mammals, except in being thicker and rougher. The scales of other reptiles are implanted on the dermis, and vary from horny in most genera to bony in the crocodile; contiguous by the borders on the head, and generally imbricated on other parts of the body; of various shapes and sizes, and arranged in serpents in long bands, moved by muscles, serving the purpose of limbs by their contact with the ground at their free posterior edges; the epidermis covers even the scales, and at certain seasons of the year is shed; in serpents the change is so complete that the cast skin comes off in a single piece, including even the covering of the eyes; the coloring matter, often of the most brilliant hues, is placed immediately under the epidermis. In batrachians, the skin has no corneous appendage, except the nail-like processes of the limbs in a few species.—The feathers of birds are analogous to the hairs of mammals, but more complicated in structure; they are believed to be not the simple product of a secretion, as is frequently maintained, but developed from bulbs formed from cells and supplied with vessels; when the feather is formed the vessels disappear, and it gradually becomes dry and dead from the summit to the base, and finally is not susceptible of further living changes, resembling in this respect the horns of the stag. Each principal feather may be moved by means of the greatly developed cutaneous muscles, which send slips to them. A feather usually presents at its lower extremity a corneous tube open at the end, continuous with the shaft, which is webbed on each side, with fringed barbules. According to F. Cuvier, the capsule which forms the feather grows during the whole development of the latter; the bulb, after it has fulfilled its office, forms in drying a series of membranous cones in the tube, generally called the pith. The new feather is at first covered by the investing capsule, which often extends several inches from the skin; it gradually becomes free, and the barbs, at first rolled up, spread laterally; the end of the tube is implanted lightly in the skin, and at every moulting season is displaced for a new feather; moulting takes place generally every year after the season of incubation, and sometimes twice a year, and is a period during which the bird loses its voice, and appears more or less unwell. Some feathers resemble the quills of the porcupine, as four or five of those in the wing of the cassowary; in the eagle the barbs are stiff and united by hooked barbules into a broad lamina for retaining better hold on the air; in the ostrich the plumes of the tail and wings are of great softness and lightness, and in the marabout the feathers resemble the softest down; in the turkey's breast they are transformed into bristly hairs, and in some cuckoos into corneous plates at the ends. It is unnecessary to more than allude to the magnificent and varied colors of these appendages, which are usually the finest in the males and in adults.—In a few mammals the skin is naked, but in the greatest number it is protected by hairs, characteristic of this class. Hairs are produced, like feathers, from cutaneous follicles or capsules lined with a cell membrane, and containing at the bottom a conical bulb supplied with blood, the soft interior constituting the pulp. Various as are the forms of hairs, they consist essentially of an external corneous cortical substance, and a medullary matter in the interior; the quills of the porcupine are only magnified and modified hairs, their cortical substance being very dense, and the medullary matter a pithy aggregation of very large cells, without any evident fluid portion in the perfect quill; so in birds, the cortical substance is found alone in the quill, while the cellular pith is confined to the shaft; in some animals the cortical substance is strongly imbricated, and the medulla made up of rounded cells. Pigmentary matter is developed in the central portion. Hair is, therefore, the product of epidermic cells, developed in abundance in the follicles, and it grows by the addition of new matter at the base. Hairs may become spines, bristles, wool, or down, according to softness and fineness; their color varies much, though less than that of feathers, being generally some modification of white, black, reddish brown, or yellowish. Recent observations seem to connect the supra-renal capsules with the regulation of the amount of pigmentary matter in man and animals. Hairs, like feathers, are usually shed once a year, with or

without change of color and character; in winter the fur is finer and thicker than in summer, being intermixed with more downy fibres. Hairs sometimes are so closely approximated as to form horns or solid plates; the horn on the nose of the rhinoceros is made up of firmly united hairs; the shields of the pangolins seem to be the product of hairs intimately consolidated, and the latter are seen projecting from the former in various parts of the body. The whiskers on the nose of carnivorous and rodent animals have the bulb projecting far into them, and are freely supplied with vessels and nerves, forming very sensitive organs of touch.—In this imperfect sketch of comparative anatomy, it must be evident to the most superficial observer that there is a general plan of structure in the animal kingdom, varying in its details, but always pointing to man as the head of creation, as the most perfect of the inhabitants of the earth. The contemplation of this vast picture of animal life is most exalting and ennobling to the devout student of nature; following the endless varieties and marvellous adaptations of created types, the mind at last must rest on the infinite wisdom and power and goodness of the supreme Architect of the universe. Those who wish to pursue this vast subject in its details are referred to the writings of Cuvier, John Hunter, Home, Carus, Müller, Meckel, Bell, Oken, Owen, Grant, De Blainville, Saint-Hilaire, Carpenter, Siebold and Stannius, Flourens, Strauss-Durckheim, and the various articles in Todd's "Cyclopædia of Anatomy and Physiology."—HISTORY OF COMPARATIVE ANATOMY. Though the philosophers of Greece had some idea of the internal structure of the animals offered as sacrifices to their gods, it was not until the time of Aristotle, or the 4th century before the Christian era, that we find any scientific treatise on comparative anatomy; the first chapter of his "History of Animals," though very imperfect, and even erroneous, in anatomical details, may be regarded as the first work written on this science. He was an exact observer, a patient collector of facts, and studied successfully many laws of nature not before recognized. After him came Theophrastus and Erasistratus. Galen, in the last half of the 2d century A. D., made many dissections of animals, of the anthropoid monkeys, and it is believed of man himself. During the middle ages the science of comparative anatomy fell into oblivion, from which it did not emerge until the 14th century; in the 16th and 17th appeared the writings of Berengario, Vesalius, Rondelet, Aldrovandus, Riolan, Harvey, and C. V. Schneider. Up to this time the science had only been studied in its separate details; the Neapolitan M. Aurelio Severino, in his *Zootomia Democritea*, first united the scattered fragments in a general treatise on comparative anatomy in 1645; after him Collins, in England, pursued the subject into the domain of natural history and pathology. The more minute organisms of the invertebrates began now to attract attention, and were well studied by Ruysch, Steno, Willis, Malpighi, Swammerdam, and Réaumur. In France, the academy of sciences early occupied itself with this science. In the latter half of the 17th century Perrault, Duverney, and Méry made exact observations on the structure of reptiles and fishes. About this time Needham in England, Redi in Italy, and Leeuwenhoeck in Holland, were pursuing their researches with the microscope on the minute animals, which Raspail and Ehrenberg have since so successfully illustrated. Up to this period a great multitude of scattered facts were brought together by the industrious compilers Blaes and Valentini, and in Manget's *Bibliotheca Anatomica*. With Boerhaave, in the early part of the 18th century, the science received a check from which it did not recover for nearly 50 years. He was a skilful botanist, but a poor zoölogist, and dogmatically maintained that the study of comparative anatomy could in no way advance the knowledge of the functions of the human organism. Notwithstanding this high authority, the great Haller, Spallanzani, and Ch. Bonnet continued their valuable observations on the general and comparative structure of man and animals. Physicians now had begun to consider this science as quite foreign to the art of medicine, but naturalists had already conceived the happy idea of making it the basis of a natural classification in zoölogy. Buffon was the first to perceive the full importance of the relation of comparative anatomy to natural history, and Daubenton made it the basis of a zoölogical classification. If Linnæus and his followers had been more familiar with it, they would have made less erroneous divisions of the animal kingdom, especially in the class of worms. Encouraged by Daubenton, Vicq d'Azyr, famous for his discoveries in myology, in the anatomy of birds, his researches on incubation, and his description of the brain, conceived a vast plan for the illustration of comparative anatomy, which was frustrated by his early death, but was nearly realized in the beginning of the present century by the great Cuvier in his *Leçons d'anatomie comparée*. In the last 100 years, among the noted cultivators of this science were Barthez in France; J. Hunter and Everard Home in England; Pallas, O. F. Müller, Merrem, Schneider, Kielmeyer, and Blumenbach in Germany; Camper in Holland; Scarpa and Poli in Italy. The time of Cuvier marks the opening of a new epoch in comparative anatomy; he applied this science to natural history, physiology, and to the study of fossils. During this epoch have flourished Geoffroy Saint-Hilaire, Meckel, Oken, Carus, Panizza, Grant, and Owen, besides a host of writers of monographs on the various classes of the animal kingdom, and on special systems and organs. The first edition of the *Leçons* appeared about the beginning of the present century, and the second was the last work upon which Cuvier labored; for more than 30

years he had collected an immense amount of facts and materials, which are partly embodied in this book; it is a monument of patient industry, a model in arrangement, and a mine of knowledge of which all observers since have availed themselves; many of its unavoidable deficiencies have been supplied by later writers, especially by Meckel; in it are laid down not only the analogies, but the differences in the structure of organized beings. His *Ossemens fossiles*, published in the first quarter of the century, is invaluable for its scientific and minute descriptions of the bones and teeth of extinct and living vertebrates. Contemporary with Cuvier was Geoffroy Saint-Hilaire, whose writings on comparative and philosophic anatomy gave great impetus to the study of natural history. At the head of the German school of philosophical anatomy stands Lorenz Oken, who extended to natural science the principles which Kant had applied to mental and moral science. In 1802 he divided the animal kingdom into five classes, according to the predominance of the special senses; in 1805 he maintained that all organic beings originate from and consist of cells; in 1806, while walking in the Hartz forest, he picked up the blanched skull of a roebuck, and, after contemplating the partially separated bones, exclaimed: "It is a vertebral column!" In the following year he delivered the famous discourse on the "Signification of the Bones of the Skull," renewing the idea of the cranial and vertebral homologies, which has since been modified, extended, and perfected by Richard Owen. Carus, in his "Treatise on Comparative Anatomy," of which the second edition was published in 1834, devotes about half to philosophical anatomy and the geometrical construction of the skeleton, carrying out the idea of Oken, Saint-Hilaire, and Spix, that the whole bony fabric is nothing but a vertebra repeated. According to Oken, the head is a repetition of the whole trunk, with all its systems. Cuvier ridiculed the idea of these transcendental homologies, and at his death the vertebral theory of the skull had apparently fallen into oblivion. In Owen's "Archetype and Homologies of the Vertebrate Skeleton," this theory is briefly stated as follows: "The head is not a virtual equivalent of the trunk, but is only a portion, *i. e.*, certain modified segments, of the whole body. The jaws are the 'hæmal arches' of the first two segments; they are not limbs of the head." The head is not a repetition of all the rest of the body; the skull is a region in itself, consisting of a series of segments or vertebræ essentially the same as those constituting the rest of the skeleton. The endoskeleton of the cranium, according to Owen, consists of the occipital, parietal, frontal, and nasal vertebræ; the ribs of the first are the shoulder blades, and the divergent appendages of the anterior extremities; the divergent appendages of the second are the branchiostegal rays, of the third the operculum, of the fourth the pterygoid and the zygoma. The different modifications of the type skeleton will be treated in the article Philosophical Anatomy. Owen revived and reworked the idea of Oken, and brought it to the now generally admitted segmental constitution of the vertebrate skeleton, as fully illustrated in the above mentioned work.

COMPASS, a magnetized needle, balanced upon its centre so as to swing freely, used to indicate the magnetic meridian, and, by means of a graduated circle connected with it, the azimuths or bearings of objects from this meridian. The Chinese appear to have been acquainted with the property of polarity in the loadstone, and in iron or steel magnetized by it, and to have been the first to apply this. Some affirm that they employed only the loadstone (magnetic iron ore), floating it upon a piece of cork; and that the magnetized needle is the invention of Flavio Gioja of Amalfi, who lived in the early part of the 14th century. Dr. Gilbert, in his *De Magnete*, &c. (London, 1600), states that



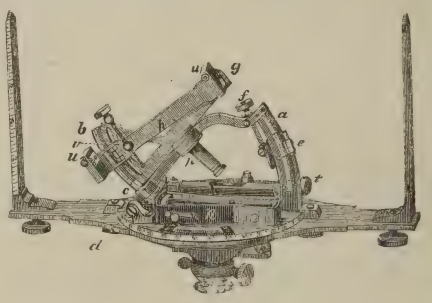
Mariner's Compass.

the compass was brought to Italy from China by Marco Polo about 1295. But there is evidence of its having been used in France about the year 1150, in Syria about the same period, and in Norway previous to 1266. Several forms of the compass are in use. The mariner's, made for service at sea, and especially for indicating the direction in which the ship's head points, consists of a needle attached to the under side of a circular card or disk, upon the top of which the cardinal points and their subdivisions are marked. A *fleur de lis* is on the N. pole of the needle, and the letter S. on the opposite pole. E. and W. are placed, the one to be toward the east, and the other toward the west, when the card, swinging with the needle, comes to rest, dividing the circle into quadrants. A diameter is drawn, bisecting each of these, fixing the N. E., S. W., N. W., and S. E. points upon the circumference; and the arcs thus obtained are again bisected by

new diameters, again doubling the number of points; and the process is repeated upon the smaller arcs, obtaining in this way 32 points or divisions of the circle, each representing an arc of 11° 15′. The points are designated as follows for one quadrant, and on the same plan for the rest: N, Nb (by) E, NNE, NEbN, NE, NEbE, ENE, EbN, E. Lesser divisions sailors indicate by half and quarter points, thus: E. N. E. ½ E., N. E. ¼ N., E. ¾ N., &c. The degrees are also usually numbered around the margin of the circular card. An agate, or better a garnet cap, is set in the middle of the needle to receive the sharp pivot standing in the middle of the compass box, upon which the needle and card are balanced. This box is of copper or brass, of cylindrical or hemispherical shape, and covered with a glass plate to exclude currents of air and dust. It is supported in a ring by two pivots projecting from opposite sides of the box, and this ring is swung by two other pivots placed so that the line connecting them is at right angles to that connecting the other two. This contrivance, called "gimbals," is designed to keep the central pivot always vertical in the movements of the ship, the box being made heavy at the bottom, so that its centre of gravity is considerably below the points of suspension, in which it swings freely. The pivots of the outer ring are fixed to a frame or to the inside of a square wooden box, in which the instrument is placed. Instead of using gimbals, a cap with a pivot standing in the top of it is sometimes placed upon the stationary pivot, and the needle is balanced upon the top of the upper one. On board ship the compass is set in a receptacle called the binnacle, and the direction in which the vessel heads is indicated by a distinct vertical mark on the inside of the inner box, close to which the points upon the card pass as this swings round.—The compass used in land surveying is made with the graduated circle fixed to the plate of the instrument, the needle pointing the degrees at each of its extremities. Two sights are erected opposite each other on the plate which supports the box, on the line of 0°–180°, and the needle when at rest points to the degree representing the azimuth of this line. With an idea of facilitating the reading of the bearing of objects seen through the sights of the instrument, the letters E. and W. in land compasses are placed opposite the positions they occupy on the card of the mariner's compass. Reading always from the N. pole of the needle, and supposing the line of the sights to be directed toward S. 45° W., this N. end will be found half way between the letters S. and W. A very convenient form of the azimuth compass is a modification of that invented by Capt. Kater, and sometimes called the prismatic compass. The needle is suspended upon a pivot in a shallow cylindrical box, and supports by its extremities a silver ring graduated to 360°, with the half degrees and sometimes the quarters also marked by short lines. The N. pole of the needle is on the zero point, and the S. pole on 180°. A sight frame with a fine hair in an elongated vertical opening is attached by hinge or otherwise on one side of the box, and opposite this is a low sight piece, so arranged with a short slit in the top and an eyehole directly under it, in which is a small transparent prism, that the eye can at the same time observe the range of the sights upon any distant object, and read through the prism the number of the degree directly under it: thus if the bearing be N. 15° E., the number seen is 185. This instrument is of great service for rapid observations; it is carried in the pocket, is held in the hand when an observation is made, and may be read to 15′ by one accustomed to its use.—The force with which compass needles tend to range in the magnetic meridian was found by Coulomb and Kater to be influenced in those of the same form, not by the amount of surface, but by their mass, when fully charged with magnetism. Shear steel was found to be the best material, and the form of the needle an elongated lozenge, the middle portion cut out, and a bar of brass inserted across the centre to receive the cap. No advantage is gained in making them more than five inches long; on the contrary, several poles are apt to be produced, the effect of which is to lessen the force of the single polarity sought for.—The compass is liable to err in its indications from causes, some of a local and others of a general nature. The former are mostly beyond the skill of man to control; and, often acting when no suspicion of their existence is entertained, the compass cannot be regarded as an accurate instrument in running lines. It has, in fact, gradually been giving place to other methods of determining these. The effect of the declination of the needle, or its variation from the true meridian, is corrected by allowing for the amount of this variation as established for the place and time, or as determined by observations made for the purpose. On certain lines upon the earth's surface, called lines of no variation, the needle points toward the pole. Such a line at the present time passes near Wilmington, N. C., Charlotteville, Va., and Pittsburgh, Pa. On the eastern side of this line the variation of the needle is toward the west, increasing in amount with the distance from it. At New York the variation is 6° W. and at Portland, Me., it is 13° W. On the other side of the line of no variation, the declination is toward the east, being 5° E. at Key West, and reaching on the Pacific coast 15° or 20° E., or almost N., N. E. This variation undergoes a progressive change in amount, and, after long periods, changes in direction, vibrating, in fact, between certain limits. In the eastern states the north pole of the needle is moving westward at the rate of about 1° in 12 years. In London, in 1576, the variation was easterly 11° 15′; in 1657–'62 it was reduced to nothing, and then slowly advanced to its maximum in a westerly direction, which in 1815 was 24° 27′

18″. Since that time it has been slowly decreasing. It is thus perceived that surveys made by the compass should always be referred to the true meridian, or their date be given, that such reference may at any time afterward be made; but the latter method is not altogether trustworthy. The subject of these movements for this continent is treated in the reports of the proceedings of the American association for the advancement of science, at their ninth and tenth meetings.—The variation of the compass in ships from local causes is a matter of the most serious consequence, and baffles the skill of man to control its effects. It is not a constant determinable error, but varies with the position of the vessel; it is generally greatest when she heads E. or W., and least when she lies on the magnetic meridian. It is different also as the ship lies on even keel or careens over on one side. The liability of error increases with the increased use of iron in the construction of ships, and those built of it are found to act themselves as magnets, especially if they stood upon the stocks with the head toward the north. In this case, sailing for some time in a contrary direction tends to change their polarity and disturb the compasses. The plates are made magnetic by the blows they receive as the ship is constructed. The attention of scientific men has been directed for years past to the devising of some protection against this evil. In iron ships compasses are stationed in different parts, and comparative observations are constantly made of their indications. The most confidence is placed in those which are furthest from the hull, as at the mast head. In the British navy it has been the practice for many years to occasionally swing around each ship, and note the indications of the compass as she heads in different directions, and thus form a table of errors to be applied to correct the compass when she is afterward sailing on these courses. The board of trade recommended the adoption of this practice for merchant ships. Professor Airy, astronomer royal, objected to it, and recommends instead the use of magnets placed near the compass, and so arranged as to neutralize the influence of all other local attractions. He also advises frequent examination of the compasses, and testing them as often as practicable by azimuth observations of a star or other objects. In some ships a neutral point has been found in which the local attractions were all balanced, and so continued to be, rendering this a suitable spot for the compass. The discovery of a sure method of obtaining a neutral point of this character is an object of the highest consequence; but, however secured, there are so many causes to influence the condition of the needle, some slow and some sudden in their action, such as electrical currents induced by atmospheric agencies, the heavy shocks of the waves upon the ship, &c., that frequent observations and constant care are essential to make the compass a safe guide. Sir John Ross found that the needle was attracted full 5° by the rays of the moon concentrated upon it. The British admiralty have caused experiments to be made, and have invited competition, in the construction of the compass; and in consequence, from being a common, it has become an artistic instrument in that country, great improvements having been made in it.

COMPASS, Solar, an instrument invented by William A. Burt of Michigan, designed for determining at any place a true N. and S. line, from which other lines may be run in any desired direction. It is furnished with a latitude arc to be set at the degree of the latitude of the place, a declination arc to be adjusted to the degree of the sun's declination at the time, and an hour arc for setting off the hour of the



Solar Compass

day. The latitude arc, *a*, has its centre of motion in two pivots, one of which is shown at *d*. It is moved up or down within a hollow arc by the tangent screw *f*, and reads to single minutes by the vernier *e*. It has a range of about 35°, so as to be adjustable to the latitude of any place in the United States. The declination arc is represented at *b*, which as well as the latitude arc is graduated to quarter degrees, and reads to single minutes by the vernier *r*, which is upon the arm *h* with its centre of motion at *g*, the centre of the arc. It is controlled by the tangent screw, seen near the arc. The hour arc, *c*, is supported by the two pivots of the latitude arc, and moves in a plane perpendicular to the declination arc. Through the centre of the hour arc passes a hollow socket *p*, in which the spindle of the declination arc turns. The hour arc is read by the lower edge of the graduated side of the declination arc. The combination of the declination arc (which is for the purpose of adjusting the sights, *u*, *u*, to the declination of the sun, so that its rays may be made to pass through them) and of the hour arc constitutes a very accurate form of equatorial sun dial, the arm *h* being made to turn upon an axis parallel with the axis of the earth, and to show the hour by indicating the number of degrees measuring the angle which the sun's rays make with the plane of the meridian. The in-

strument also has a needle box, *n*, with an arc of about 36°. When the instrument is turned so that the rays of the sun penetrate a lens and form a bright focus between cross lines drawn upon a silver disk, the sights must be upon a true N. and S. line. A faint glimmer of the sun is sufficient, so that its use is not interrupted in the woods, nor in moderately cloudy weather. By reference to the magnetic needle attached to the instrument, the local variation is determined whenever an observation is taken. In hands accustomed to its use, it is adjusted in less time than is required for the needle of a surveyor's compass to settle. The perplexities caused by local attraction are avoided, and for this reason, and others also, it is much preferred to other instruments in running important lines upon the government surveys in the western states. The boundary line between Michigan and Wisconsin was run by it; and when used to determine the latitude at points on this line, the results agreed with those obtained by the very accurate surveys of Capt. Bayfield of the royal army. Capt. Talcott, in a letter to Mr. Burt, says that in running the line between Iowa and Minnesota, he could not distinguish upon the map of the largest scale the line it fixed from that determined by the most careful astronomical observations.

COMPIÈGNE (under the early Frankish kings, *Compendium*), a town of France, in the department of Oise, on the left bank of the river Oise, near the mouth of the Aisne, and on the great northern railway, 43 m. N. N. E. of Paris; pop. in 1866, 12,150. It contains a celebrated palace, originally built by Louis IX., rebuilt by Louis XIV., and improved by Louis XV. and Louis XVI., and by Napoleon I. From very early times Compiègne was a favorite residence of the kings of France; several parliaments were held there, and Joan of Arc was taken prisoner before its walls, the spot of her capture, marked by the ruined *tour de la Pucelle*, being still pointed out. In 1624 a treaty between Holland and France was signed at Compiègne. Charles IV., ex-king of Spain, resided some time in its palace, and Napoleon's first meeting with Maria Louisa took place



Palace at Compiègne.

here. Napoleon III. and his court frequently visited the place; the shooting parties given by him in the large adjoining forest, which abounds in game, enjoyed a high reputation in the fashionable world. The grounds were thrown open to the public in 1871. The town contains three splendid churches, a picturesque town hall, a fine bridge (*pont neuf*) over the Oise, a theatre, various other public buildings, and a public library.

COMPITALIA, or **Ludi Compitalitii,** a festival among the ancient Romans, instituted in honor of the *lares compitales*, or the deities who presided over the places where two or more roads met. The festival was of very ancient origin, and is said to have been restored after it had fallen into disuse by Tarquin the Proud, who caused boys to be sacrificed at it; but this was soon discontinued, and garlic and poppy heads were substituted for human sacrifices.

COMPLEXION (Lat. *complexio*), the color of the skin. This color exists in the epidermis alone, and depends upon the admixture of pigment cells with the ordinary epidermic cells. The ancient anatomists divided the skin into two parts or layers, the inner being denominated the cutis or dermis, and the outer the cuticle or epidermis. Malpighi was the first to discover what was thought to be a third layer interposed between the cutis and the cuticle, to which the name of *rete mucosum* was applied, from the circumstance that it was supposed to furnish mucus to lubricate those papillæ with which it was placed in immediate contact; it has also been called *stratum Malpighii*. Flourens went beyond Malpighi, and divided this middle portion of the skin into four layers: 1, one lying immediately on the cutis, of a cellular structure; 2, a continuous membrane presenting the characteristics of mucous membranes generally, on the external surface of which is spread a black pigment which constitutes the third layer; and 4, the inner portion of the epidermis, lying contiguous to the coloring matter. He displayed by maceration all these layers in the skin of a negro; but on subjecting that of a white man to the same process, he was unable to discover the pigment or the mucous membrane deposited upon it. He therefore concluded that the skin of the colored races has an apparatus entirely wanting in the white, and regarded this diversity

as forming a specific distinction, marking the European and negro as belonging to separate species; an opinion which, if the fact were true, would not admit of question, for, as Prichard remarks, the endowment of an entirely peculiar organ to one race of which no traces are to be found in the proximate tribe, is a much greater difference than is often to be found on comparing species which stand next to each other in the zoölogical series. There are many facts, however, which do not admit of explanation upon Flourens's theory. Among these are the discolorations which take place in the skin of European races, in certain disordered states of the constitution. During pregnancy many females have a dark tinge around the nipples, varying in intensity in different cases, and in some the entire abdomen is covered with a hue as dark as that of the negro. Bomare mentions a French peasant woman whose abdomen became completely black during each pregnancy. Camper gives an account of a female of rank who had naturally a white skin and beautiful complexion, which whenever she became pregnant began to grow brown. "Toward the end of pregnancy," he says, "she became in color a veritable negress." After delivery the dark color gradually disappeared. Dr. Starck mentions a man who after an attack of intermittent fever became as black as a negro. Blumenbach possessed a part of the skin taken from the abdomen of a beggar, which was as black as that of an African. Elliotson relates the case of a girl in St. Thomas's hospital, whose family were all white, but whose left shoulder, arm, and hand were of negro blackness, except that a stripe of white ran between the elbow and armpit; also that of a white woman who in 20 years became as black as a negress without any evident reason. A case is related in the *Journal Général*, where a woman became suddenly black from mental distress, and remained so. The blackness in this case was not caused by jaundice or congestion of blood, but by a change in the coloring matter of the rete mucosum. The "Transactions of the Medical Society of the State of New York" for 1858 contain a case of a change of color in the person of a female aged 16 years, reported by Dr. W. H. Gardiner. When the patient was first seen by Dr. Gardiner, Sept. 15, 1857, the discoloration of the skin had existed for about two years, and she presented in color the appearance of a dark mulatto with distinctly marked European features. Her father was of English, and her mother of American birth; both had light complexions, with light eyes and brown hair. All their children resembled them in complexion except the patient of Dr. Gardiner, who possessed the same complexion as her brothers and sisters until she had attained her 14th year. Soon after puberty some dark brown spots were observed upon her forehead, which looked at a little distance as if covered with fine dust. These spots were not constant, nor did they attract much attention until they had been present about two years. At the age of 16, after an attack of slight illness, her complexion grew rapidly darker, and in about two months had acquired the deep hue which it afterward bore. At this period she presented, when at a short distance, the appearance of a white person whose skin had been covered with a thin coating of lampblack, through which some appearance of the hue of the surface was apparent, with here and there spots, from a few lines to a fourth of an inch in diameter, which were as black as the skin of the darkest African. On removing the cuticle from one of these spots, it was found to be overspread with a pigment which had much the color of lampblack mixed with mucilage. The hair had changed from its original brown to black, and become coarse and straight. Her eyes were of light hazel, the whites presenting that pearly appearance peculiar to the colored races. Every portion of the surface was free from an icteritous tint. She died in the early part of October, 1857, from disease apparently in no way connected with the discoloration of the skin. These facts show that a physical change may take place by means of which the skin of an individual of a white race may become as black as that of the native of Africa. The coloring matter is likewise liable to be absorbed in the skin of those to whom it is natural, and instances are not uncommon of negroes who gradually lose their black color, and become as white as if they were the offspring of parents of another race. The "Manchester Memoirs" contain the case of a negro 40 years of age whose skin had so changed in two years that the narrator was convinced that all the black portions remaining did not exceed a square foot, and the change was then continuing very rapidly. The "Philosophical Transactions" contain the case of a negress in Maryland 40 years of age who had been turning white for 15 years, and had become in that time scarcely different in color from a European. Another instance is related in the "Philosophical Transactions" of a boy born in Virginia of black parents, who continued of his native color until he was three years of age, at which time a change began to take place, although the boy's health continued good. At first white specks made their appearance on his neck and breast, which soon increased in number and size so that from the upper part of his neck to his knees he was completely dappled. Dr. Barton relates the case of Henry Moss, a negro, in the state of Maryland, whose skin had undergone a complete change from a deep black to a clear and healthy white. The change commenced about the abdomen, and gradually extended over the different parts of the body, so that in seven years it had spread over a greater part of the skin. It had not a sickly or albino hue, as if from the effect of disease, but was of a healthy aspect. He had never suffered from disease, and during this change, which was gradual and

frequently irregular, he continued in robust health. A curious case is narrated by Dr. Hutchison of Missouri (now of Brooklyn, N. Y.) in the "American Journal of Medical Sciences" for January, 1852. The subject of this notice was a slave aged 45. He was born of black parents, and was himself perfectly black until the age of 12. At that time a portion of the skin an inch wide, encircling the cranium just within the edge of the hair, gradually changed to white, also the hair occupying that locality. A white spot next appeared near the inner canthus of the left eye, and from this the white color gradually extended over the face, trunk, and extremities, until it covered the entire surface. The complete change from black to white occupied about ten years, and but for his hair, which was crisped or woolly, no one at this time would have supposed that his progenitors had any of the characteristics of the negro, his skin presenting the healthy vascular appearance of a fair-complexioned European. When about 22, dark-colored or brown spots began to appear on the face and hands, being limited to those portions of the surface exposed to light. Thus it appears that the coloring matter that gives rise to the various hues in the complexion is sometimes produced in the skin of persons born white, and at others removed from those born black. Now it is hardly possible, in view of these facts, to suppose with Flourens that the discoloration which takes place in the skin of the white person is totally different in kind and has its seat in a different structure from that which produces the black or tawny hue in the colored races.—Microscopical investigations have done much to solve the doubt that hangs over this question. Henle, in examining the skin of the negro by the aid of the microscope, discovered, besides the order of cells usually found, others containing the black pigment which imparts the color to the African's skin. He found these last aggregated especially on those parts of the rete mucosum which project and correspond with the furrows of the surface of the cutis. Dr. Simon of Berlin took pains to ascertain whether the discolorations which occasionally take place in the skin of persons of European extraction depend upon the presence of similar cells filled with pigment; and in examining the discolored portions of such skins, as the areola around the nipple, he found that the discolorations depended on the presence of cells filled with pigment in the rete mucosum. The shape and size of these cells correspond with those described by Henle as existing in this portion of the skin of the African, and which imparts to it its peculiar color. Simon also examined many of those abnormal discolorations that take place in *nævi materni*, or congenital spots, moles, and summer freckles, and found in each that the coloring substance was contained in the rete. All of these discolorations are related therefore, Simon concludes, to the normal and natural colorations in the skin of the negro. The rete mucosum, which derives so much importance from its being the seat of the coloring matter that gives rise to the varieties of complexion observable among the different races of mankind, is found by later microscopical researches, and especially those of Kölliker, not to be a distinct structure, but to consist of the more recently formed parts of the epidermis, whose cells are not yet consolidated by the formation of horny matter in their interior. The pigment cells which secrete coloring matter, as first shown by Simon, are not readily distinguishable in the epidermis of the white races, except in certain parts of the body, as around the nipple, but are quite perceptible in the new layers of the epidermis of the negro. It was supposed by Simon that these cells gradually become flattened, and passing to the surface give the dark tint observable in the colored races. The examinations of Kölliker establish the fact that the cells containing coloring material do not change their place, but remain stationary in that portion of the epidermis in which they were first developed. Dr. Carpenter says: "The epidermis or cuticle covers the exterior surfaces of the body as a thin, semi-transparent pellicle, which is shown by microscopical examination to consist of a series of layers of cells, which are continually wearing off at the external surface and are being renewed at the surface of the true skin, so that the newest and deepest layers gradually become the oldest and most superficial, and are at last thrown off by desquamation. In their progress from the internal to the external surface of the epidermis, the cells undergo a series of well marked changes. When we examine the innermost layer we find it soft and granular, consisting of nuclei in various stages of development into cells, held together by a tenacious semi-fluid substance. This was formerly considered as a distinct tissue, and was supposed to be the peculiar seat of the color of the skin; it received the designation of *rete mucosum*. Passing outward, we find the cells more completely formed; at first nearly spherical in shape, but becoming polygonal where they are flattened one against another. Mingled with the epidermic cells we find others which secrete coloring matter instead of horn; these are termed pigment cells. The most remarkable development of pigment cells in the higher animals is on the inner surface of the choroid coat of the eye, where they have a regular arrangement, and form several layers known as *pigmentum nigrum*. The black color is given by the accumulation within the cells of a number of flat, oval, or rounded granules of extreme minuteness, which exhibit an active movement when set free from the cell, and even while enclosed within it." Quain and Sharpey say: "Many of the cells of the cuticle contain pigment, and often give the membrane more or less of a tawny color, even in the white races of mankind. The blackness of the skin of the negro depends

entirely on the cuticle. The pigment is contained principally in the cells of the deep layer or rete mucosum, and appears to fade as they approach the surface, but even the superficial part possesses a certain degree of color."—Exposure to light exercises a marked influence over the development of the pigment cells of the skin, and hence many persons become spotted with brown freckles under the stimulus of a summer sun. In the same manner the light skin of the European acquires a swarthy hue when exposed to a long continuance of the sun's rays in a tropical climate, which is due to a development of dark pigment in the cells of the cuticle. Bishop Heber, in his observations on India, says: "It is remarkable to observe how surely all these classes of men (white—Persians, Greeks, Tartars, Turks, and Arabians) in a few generations, even without intermarriage with the Hindoos, assume the deep olive tint, little less dark than the negro, which seems natural to the climate. The Portuguese have during 300 years' residence in India become as black as Caffres." "The hottest portion of the globe," says Dr. Pickering, "appears to be about 17 degrees in width, counting from lat. 27° N., and extends from the Atlantic to the Ganges. One third, perhaps, of this immense tract is inhabited by the white race, although under a physical aspect that would not readily be recognized by Europeans. The complexion, always dark, is in frequent instances sufficiently so to conceal a flush; indeed, the Malay brown complexion seems to preponderate, and I have seen Arabs of deeper hue who were apparently of unmixed descent. In short, the white race is here protean or polymorphous, and exhibits a diversity in feature and complexion that I have not found in the other races." Dr. Smith says that the influence of climate on the human complexion is demonstrated by well known and important events within the memory of history. From the Baltic to the Mediterranean the different latitudes of Europe are marked by different shades of color; and in tracing the origin of the fair German, the dark-colored Frenchman, and the swarthy Spaniard and Sicilian, it has been proved that they are all derived from the same parent stock, or at least from nearly resembling nations. The southern provinces of France, of Italy, of Spain, and of other European countries, are distinguished from the northern by a much deeper shade of complexion; thus, the traveller through Spain will discover that while the ladies of the province of Biscay possess fair complexions, those of Granada and other southern provinces are endowed with that dark, swarthy hue which the Spaniards consider as constituting one of the chief elements of beauty. The Georgians and Circassians, who are acknowledged to be the fairest people on the globe, when transferred to a residence in Constantinople lose their delicate complexion and gradually acquire a sallow hue, which in their descendants becomes a dark olive. But perhaps the most striking example is furnished by the Jews, who, by abstaining or being prohibited from intermarrying with other nations, form a distinct people in every quarter of the globe, and yet show noticeable shades of complexion in different climates. The native population of the United States furnish a strong illustration of the influence of climate over the complexion. Deriving their origin chiefly from the more northern nations of Europe, and especially from the English and Irish, whose complexions are remarkably fair, they are found to differ from their ancestors in this respect in a very material degree. A certain paleness of countenance, differing entirely from the marked white and red of the English, strikes the observant traveller at every step of his progress through the United States. The elevated temperature of the lowlands in Virginia and Maryland, especially near the seacoast, greatly contributes to impart a darkness to the complexion which, when associated with the paleness so common to the whole population of the United States, removes them in a most marked manner from their British ancestors. It is very easy to distinguish the natives of the eastern shore in Maryland, and of the counties contiguous to the ocean in Virginia, from the inhabitants of the more elevated districts in these states, as much by the marked sallowness of the complexion of the former as by their excitable temperament and spare habit of body. Going still further south, along the seacoast of Georgia and the Carolinas, it is not unusual to meet with individuals, especially among those much exposed to the influence of the sun, who are but a few shades lighter than the aboriginal tribes who formerly peopled these states. "If," says Dr. Barton, "these remarkable changes are wrought on the system in the term of a few years, we ought not to be surprised at seeing even the most opposite tints and features produced from the long and permanent operation of moral and physical causes." Yet, notwithstanding the influence exerted by heat in darkening the complexion, it is true that many light nations are found in the warmest regions, while there are dark ones resident in the coldest. Lord Kames, M. de Virey, and Prichard have quoted many instances of this kind. "We found," says Humboldt in his "Political Essay on New Spain," "the people of the Rio Negro swarthier than those of the lower Orinoco, and yet the banks of the first of these rivers enjoy a much cooler climate than the more northern regions. In the forests of [Venezuelan] Guiana, especially near the sources of the Orinoco, are several tribes of a whitish complexion, the Guiacos, Guajoribs, and Argues, of whom several robust individuals, exhibiting no symptom of the asthenical malady which characterizes albinos, have the appearance of true mestizos. Yet these tribes have never mingled with Europeans, and are surrounded with other tribes

of a dark brown hue. The Indians in the torrid zone, who inhabit the most elevated plains of the Cordilleras of the Andes, and those who are under lat. 45° S., have as coppery a complexion as those who under a burning climate cultivate bananas in the narrowest and deepest valleys of the equinoctial region." "Do we not in fact behold," says Virey, "the tawny Hungarian dwelling for ages under the same parallel and in the same country with the whitest nations of Europe, and the red Peruvian, the brown Malay, the nearly white Abyssinian, in the very zones which the blackest people in the universe inhabit? The natives of Van Diemen's Land are black, while Europeans of the corresponding northern latitudes are white; and the Malabars, in the most burning climate, are no browner than the Siberians." The temperature of a place, however, depends not only on its latitude, but on its elevation and its meteorological conditions. For these reasons the lines of equal temperature do not always agree with the same degrees of latitude, nor are they measured by the widest range in the thermometer. Now, although the elevation of temperature in Africa may not at any one time be greater than is sometimes observed in America, yet there can be no doubt that the annual amount of heat far exceeds that found in the tropical latitudes of the western continent. In measuring the effect of any particular climate upon complexion, therefore, it is necessary not only to determine its absolute degree of latitude, but also to ascertain what other causes are in operation tending to bestow a deeper or lighter shade upon the human countenance. It is a well known fact that the luxuriance of vegetation is not so much dependent on the intensity as on the mean quantity of heat; and the same law which operates in effecting a distribution of plants over the surface of the globe, independent of well defined lines of latitude, likewise exercises its influence in determining the intensity of shade observable among the different races of mankind. Those nations most exposed to the weather and furthest removed from civilization are, as a general rule, the darkest. Thus the South sea islanders, who seem to be of one family, vary in complexion according to the degree of their civilization. The Australians, who are savages, are black; The New Zealanders, half civilized, are tawny; the Friendly islanders are frequently of an olive color; while the people of Tahiti and the Society islands, who are the furthest advanced in civilization, are often possessed of a light complexion and flowing ringlets, and sometimes are considered really beautiful. The same fact is observable among persons of different degrees of cultivation in countries having complete and absolute divisions of rank. Thus not only are the nobility of France, Spain, Italy, Germany, and England easily distinguished from the peasantry, but the intermediate classes are as readily determined. An interesting fact connected with this subject is, that the children of those most exposed to the influence of the sun among the white races, and even the offspring of many who possess a tawny color, are as fair at birth as those of the most delicately complexioned parentage. The children of the Moors are born white, and acquire the complexion of their parents in after years. Russell says that the inhabitants of the country in the vicinage of Aleppo are naturally of a fair complexion; and among the women in the upper ranks of life this fair skin is preserved through life, while the inhabitants of that country are generally tinged with a shade which, although lighter than the negro, is deeper than that of the Telingan.—The division of mankind by Blumenbach into the five varieties of Caucasian, Mongolian, Ethiopian, American, and Malay, is, among other characteristics, largely founded on difference in complexion. The Caucasian is for the most part characterized by a white skin and red cheeks; the hair of a nut-brown, running on the one hand into yellow, and on the other into black, soft, long, and undulating. The Mongolian has a skin of an olive color, and black, stiff, straight, and sparing hair. The Ethiopian has a black skin, and black curly hair. The American possesses a skin of a copper color, with black, stiff, straight hair. The Malay has a tawny skin, and black, soft, curled hair. (See ETHNOLOGY.) Dr. Pickering, who has made very extensive observations upon different races, adopts a new classification. "I have seen in all," he remarks, "eleven races of men, and though I am hardly prepared to fix a positive limit to their number, I confess, after having visited so many different parts of the globe, that I am at a loss where to look for others. They may be enumerated conveniently enough in the order of complexion, beginning with the lightest. *a.* White: 1, Arabian; 2, Abyssinian. *b.* Brown: 3, Mongolian; 4, Hottentot; 5, Malay. *c.* Blackish brown: 6, Papuan; 7, Negrillo; 8, Indian, or Telingan; 9, Ethiopian. *d.* Black: 10, Australian; 11, Negro." This classification of Dr. Pickering is here introduced to show the importance of complexion as a characteristic of the different varieties of the human race. It will be observed that the color of the hair appears to be in a great degree connected with that of the skin; and it may be added that the color of the eyes likewise bears the same relation. Light hair is the usual accompaniment of a white and thin skin, while dark hair and a dark complexion are usually associated together.—Among all races there is a class termed albinos, whose bodies appear to be destitute of coloring matter, and who, besides a creamy-white skin, have white hair and pale, rose-colored eyes, owing to the absence of the pigmentum nigrum from the sclerotic coat of the eye. This renders them unusually sensitive to light. Werfer, in his description of those he saw among the inhabitants of the isthmus of Darien, says: "They see not well in the sun, poring in the clearest day, their eyes being

weak and running with water if the sun shines on them, so that in daytime they care not to go abroad, unless it be in a cloudy, dark day. Besides, they are a weak people in comparison with others, and not very fond of hunting or other laborious exercises, nor do they delight in such; but notwithstanding their being thus sluggish and dull in the daytime, yet when moonshiny nights come, they are all life and activity, running abroad into the woods and turning as fast by moonlight, even in gloom and shade, as other Indians by day." Dr. Davy, in speaking of an albino in Ceylon, where they are often seen, says: "The young albino 12 years of age, in England, and certainly in Norway, would not be considered peculiar, for her eyes were light blue, and not particularly weak, and her complexion fresh and rosy. She had considerable pretensions to beauty, and was not without admirers among her countrymen. The Indians are of the opinion that the white race were propagated from an albino, and there is a tradition among them to this effect."—However marked may be the influence of climate and surrounding circumstances upon the complexion, it is incompetent to produce such changes as to lead the ethnologist to mistake one race for another. The hue of the European, although it may exhibit a deeper shade under some circumstances than under others, is the same under the influence of the intense heat of the East Indies or the tropical climate of South America, and is entirely distinct from that of the natives of those countries. The three races which exist side by side in America are never merged in each other by mere contiguity, but continue separate and distinct except when a commingling of the races gives rise to a progeny that partakes of the character of both parents. The children of Europeans, of negroes, and of Indians, born in America, in the course of a few days after their birth begin to assume the complexion of their parents. Those of Caucasian parentage, whether natives of a high or low latitude, exhibit the fair complexion due to their origin, which may be retained by proper care through life; but those born of American or Ethiopian parents, however carefully guarded from the influence of the heat and sun, rapidly acquire the dark or tawny hue of the race from which they have sprung. Nor is the force of this position lessened by the observation of those travellers who have found the different tribes of the white race that have for centuries inhabited the tropics of a hue nearly as dark as that of the natives of the countries where they are found. A close examination in each of these cases would develop a marked difference between the shade of color of the white and that of the colored person, as distinct in character and as easily discerned as are the features that distinguish the one race from the other. The inferences to be drawn from these facts are: 1, that no essential anatomical difference exists between the skin of the white and colored races; 2, that climate, temperature, and exposure are competent to produce marked changes in the complexion; 3, that these changes under no circumstances proceed so far as to bestow the complexion peculiar to one race upon the individuals of another; 4, that children of white parents, under every condition of climate, are born fair; and 5, that the children of parents of colored races partake of the complexion of their parents from their earliest infancy.

COMPLINE, or **Complin** (Fr. *complies;* Lat. *completorium*, from *complere*, to complete, and in some liturgical books *complini*), in the Roman Catholic breviary, the complement of vespers or evening office, and the conclusion or last of the "daily" canonical hours, as distinguished from the "nocturnal" hours. According to Sozomen (*Hist. Eccl.*, iii. 13) and Cassian (*Inst.*, iii. 2), the psalms now recited at compline formed originally part of the vesper office. This is plainly indicated by St. Basil (*In Reg. Fus. Disp., interr.* 18), who says that "when the shades of evening begin to fall" we should sing the 90th psalm, *Qui habitat in adjutorio altissimi*, which is now the principal psalm of compline, while the hymn begins *Te lucis ante terminum.*

COMPLUTENSIAN POLYGLOT. See Bible.

COMPOSITE ORDER, one of the five orders of architecture, a combination made by the Romans of the Ionic and Corinthian styles, and hence also called the Roman order. It differs from the Corinthian chiefly in having upon the capital the volutes of the Ionic order; and its frieze and other of its members admit of a richer decoration. Among the principal examples of this order at Rome are the temple of Bacchus, the arches of Septimius Severus and of Titus, and the arch in the baths of Diocletian. (See Architecture.)

COMPOUND BLOWPIPE. See Blowpipe.

COMPRESSIBILITY, that property of matter which allows the volume of a body to be diminished by pressure, being a consequence as well as an evidence of porosity. The word porosity as used here does not signify the ordinary sensible porosity of bodies, such as is observed in a sponge or in wood, but that which has received the name of physical porosity. The physical pores are the exceedingly small interstices between the molecules of matter of which a body is formed, so minute in solids and liquids as to allow the molecules to remain within the sphere of cohesive attraction. Examples of compressibility are furnished by the reduction of liquids under pressure, and of compact masses of metal by hammering. The relative compressibilities of different bodies are readily ascertained by subjecting them to a given pressure and observing the diminution of volume resulting in each, care being taken that the temperatures are the same, because each degree of heat increases the repulsion between the molecules. Under the same pressure, a solid heated is larger than when cold. When bodies

are compressed sensible heat is always manifested, the force being converted to this condition. Gases and vapors are the most compressible of all bodies, and within certain limits their compressibility is uniform and in proportion to the compressing force, as enunciated in Mariotte's law. The forcing of water through the sides of a heavy hollow ball of gold in which the liquid was confined, in the attempt of the Florentine academicians to compress it, led to the long continued belief in the total incompressibility of liquids; but this property has been proved by Canton, Oersted, and others to exist in them as well as in gases and solids. Later experiments by Colladon and Sturm show that an additional pressure equal to that of the atmosphere caused mercury to diminish $\frac{1}{3,000,000}$ of its original volume, water $\frac{1}{300,000}$, and ether $\frac{133}{1,000,000}$.

COMPTON, a S. W. county of the province of Quebec, Canada, bordering on Maine, New Hampshire, and Vermont, and intersected by the Grand Trunk and St. Lawrence and Atlantic railroads; area, 1,380 sq. m.; pop. in 1871, 13,665, of whom 4,257 were of English origin or descent, 3,785 French, 3,282 Scottish, and 1,885 Irish. Its surface is diversified by several lakes, and a mountain range extends along its S. and S. E. border. The soil, drained by the head waters of St. Francis and Chaudière rivers, is moderately fertile. Capital, Compton.

COMPTON, Henry, an English prelate, born at Compton in 1632, died July 7, 1713. He was the youngest son of Spencer, second earl of Northampton, studied at Oxford, and after the restoration became a cornet in a regiment of horse. Afterward he left the army for the church, was ordained at the age of 30, and became bishop of Oxford in 1674, and bishop of London in 1675. Charles II. made him a member of his privy council, and intrusted to him the education of his nieces Mary and Anne. He was distinguished for his hostility to the church of Rome. After the accession of James II., Dr. Sharp, rector of St.-Giles's-in-the-Fields, having preached several sermons vindicating the church of England against the papacy, became highly obnoxious to the court, and Compton was required by a royal order to suspend him. His refusal to obey was made the ground of his own suspension. He was restored to his see at the time of the revolution, and, together with the bishop of Bristol, made up the majority of two in the house of lords for filling the vacant throne. He performed the ceremony of the coronation of William and Mary, and was afterward appointed one of the commissioners for revising the liturgy. During the reign of Anne he was put on the commission for the union of England and Scotland. The reconciliation of dissenters with the church of England was one of his favorite projects.

COMPURGATORS, in Saxon law, persons who appeared to join to the oath of an accused party their own oaths to their belief in his innocence. Compurgators were to be twelve in number, from the neighborhood of the accused; and to this practice of purgation has been referred the origin of jury trial. The process was also admitted in case of simple contract debts. The like practice of purgation in the case of clerks-convict continued in England until abolished by statute 18 Elizabeth, c. 7.

COMSTOCK, John Lee, M. D., an American author, born at Lyme, Conn., in 1789, died in Hartford, Conn., Nov. 21, 1858. He studied medicine, and served as an assistant surgeon in the war of 1812. At the close of the war he left the army and settled at Hartford in the practice of medicine. Soon after, his attention was turned toward the compilation of school books. He wrote elementary treatises on natural philosophy, chemistry, mineralogy, botany, geology, physiology, natural history, and physical geography, and an essay on gold and silver. Some of his works were only compilations; but he made considerable attainments in natural science, constructed most of the apparatus he used, and prepared nearly all the drawings for the illustrations of his works.

COMTAT-VENAISSIN, an ancient territory of S. France, surrounded, with the Comtat d'Avignon, by Dauphiny, Provence, and Languedoc, from which it was separated by the Rhône. It passed from the Romans to the Burgundians and the Franks, in the 11th century to the counts of Arles, and in the 12th to the counts of Toulouse. The latter were dispossessed for a short time by the crusaders in the following century, but were reinstated under Count Raymond VII., whose daughter Jeanne married Prince Alphonse, a brother of Louis IX. After his death Philip III. of France gave it to Pope Gregory X. (1273). Its name was derived from Venasque, the ancient capital, which was supplanted by Carpentras. It remained in the hands of the popes almost uninterruptedly till 1791, when it was annexed to France, together with Avignon, as part of the department of Vaucluse.

COMTE, Auguste, a French philosopher, founder of the system of positivism, born in Montpellier, Jan. 12, 1798, died in Paris, Sept. 5, 1857. He received his education at the polytechnic school of Paris, where he became a teacher in 1832. He gave his principal attention to mathematics and the physical sciences, but was not indifferent to moral inquiries, and was attracted by the socialism of Saint-Simon. This was in 1815, and Comte, though the youngest, soon became one of the most prominent of his disciples. In 1820 he was called upon to prepare an exposition of the doctrines and objects of the school, which he did in a little work called the "System of Positive Politics;" but Saint-Simon saw at once that his pupil had adopted another idea than his, and that positive politics was not socialism as he understood it. His principal objection was that Comte overlooked entirely the religious or sentimental side of human nature. In 1825

the school divided; Enfantin, Bazard, Augustin Thierry, Chevalier, and others, proceeding to organize a system of propagation for the opinions of their master, and Comte taking to his own course. In 1826 he was arrested in his speculations by what he denominates "a cerebral crisis," but which his physicians described as a brain fever, terminating in insanity. He soon recovered, and devoted the rest of his life to teaching mathematics, at first as a professor in the polytechnic school, and to the gestation of his new schemes of thought. In 1830 he began the publication of his chief work, the *Cours de philosophie positive*, in six large volumes, which was not completed till 1842. It was filled with novel speculations, but attracted little or no attention, and it was not till 16 years after the publication of the first volume that it was noticed in any leading review. In 1843 Comte published a *Traité élémentaire de géométrie analytique*, and in 1854 a *Traité d'astronomie populaire*, both works of a strictly scientific cast. Meanwhile he had quarrelled with his brother professors, the result of which was that he lost his official employment. He then supported himself by private teaching, by Sunday lectures to a small audience, and by the voluntary contributions of a little knot of disciples. In 1848 a *Discours sur l'ensemble du positivisme* appeared, recapitulating his doctrine as a whole, and giving a brief outline of what it proposed for the future. But it was only a prelude to a work printed in 1851–'4, called the *Système de politique positive* (4 vols.), which gave the final view of his doctrine. A short *Catéchisme positiviste*, published in 1852, is a mere summary exposition of the teachings of the larger work. In the interval between the publication of the *Cours* and the *Système* he fell in love with a married woman; and his affection for her, intensified by her sudden death, convinced him that the old criticism of Saint-Simon was true, and that the religious or sentimental side of human nature was not to be despised. He died of hypertrophy of the heart, and was buried in the cemetery of Père la Chaise.—Comte's scheme of thought is so immense that no attempt to describe it in an abridgment can do justice to it; yet a few words in regard to it are necessary. His first position is that the human mind, in its progress historically and individually, passes through three stages of development: 1, the theological, in which all the phenomena of nature are imputed to the active agency of the gods; 2, the metaphysical, in which the gods are made to give place to certain abstract entities and quiddities called "nature," "harmony," "number," &c.; and 3, the positive or scientific, in which it is discerned that man can know nothing of causes, and is only able to refer phenomena to their general laws of existence or succession. Arrived at this stage, science is born, and knowledge, no longer baffled by the inscrutable or misled by the imaginary, advances, through one generalization after another, to a comprehensive perception of the universe as a whole. His second position is, that in this advance it proceeds in a regular hierarchical order, from the simple to the complex, or from the most elementary relations of numbers to the highest and deepest complications of society and life. This order of the sciences he arranges as follows: 1, mathematics, the most general and simple of all, dealing only with numbers and magnitudes; 2, astronomy, the application of the principles of mathematics to the phenomena of the celestial sphere; 3, the application of mathematics and astronomy to the phenomena of the terrestrial sphere, or general physics, including heat, light, optics, electricity, &c.; 4, chemistry, the science of the phenomena of the interior of bodies or of molecular changes; 5, biology, the science of the phenomena of individually organized being, or vegetable and animal life; 6, sociology, the science of the phenomena of corporate or social life, which, presupposing and containing all the former, is the queen of all the sciences. Having finally reached his goal, or sociology, he undertakes, as his third position, a demonstration of the statics and the dynamics of social life, or of the fundamental principles of order and liberty. The first element of order is the family; the second, the community, composed not of individuals but of families, and coöperating to a certain extent in their employment; and the third, the government or state. Liberty is the effect of this harmonious organization, and progress the development of it, by means of the conquest—1, of material nature; 2, of the lower propensities by the higher intellectual faculties; and lastly, of the selfish passions by the social affections. To this point, the mere superiority of the social affections, Comte had gone in his first work; but after his love experience, and upon a maturer consideration of the nature and objects of life, he saw that a deeper question remained untouched. It was that of religion, which he conceived to be the complete harmony of human existence, individual and collective, or the universal unity of all existences in one Great Being, whom he calls Humanity. Religion, at first spontaneous, dissipates itself in fetishism and polytheism; next, inspired, it lifts its thoughts to the vague abstract unity of God; and finally, revealed or demonstrated, it finds its object in a true, living, and ever active being, which is humanity. This alone is the genuine end and object of all worship, and to this every effort of the good man should converge. But, as eminent individuals, Moses, Socrates, Mohammed, &c., are manifestations of the Grand Being, it is not improper to pay to them a high yet qualified respect. Accordingly, Comte arranged the formula of a worship of humanity by means of homages and festivals to its most illustrious representatives. He even reformed the calendar in view of it, and called the months after the names of illustrious benefactors, and the

weeks after others.—See "Comte's Philosophy of the Sciences," by G. H. Lewes (London, 1853); "The Positive Philosophy of Auguste Comte," by Harriet Martineau (1854); *Cours de philosophie positive*, with a preface by É. Littré (6 vols. 8vo, Paris, 1864); *Notice sur l'œuvre et sur la vie d'Auguste Comte*, by Dr. Robinet (2d ed., 1864); *Auguste Comte et la philosophie positive*, by É. Littré (1864); and "Comte and Positivism," by J. S. Mill (1865).

COMUS, in the later Greek mythology, the god of festive mirth. He is represented as a winged youth, intoxicated and languid after feasting, his head sunk on his breast, his legs crossed, his countenance flushed with wine. In one hand he feebly grasps a hunting spear, in the other an inverted torch.

CONANT. I. Thomas Jefferson, an American Biblical scholar, born at Brandon, Vt., Dec. 13, 1802. He graduated at Middlebury college in 1823, pursued philological studies for two years in New York, was for a short time tutor in Columbian college at Washington, and afterward professor of languages in Waterville college, Maine. He resigned this post in 1833, and took up his residence near Boston, where he could more advantageously prosecute his studies in the oriental languages. He had become convinced of the necessity of a fresh translation of the Scriptures, which should fully represent the original text; and to this his life has been chiefly devoted. In 1835 he accepted the appointment of professor of Biblical literature and criticism in the Baptist theological seminary at Hamilton, N. Y., which he held till 1850, although two of the intervening years were spent in Europe, mainly in Halle and Berlin. While professor at Hamilton he translated the Hebrew grammar of Gesenius, with the additions of Rödiger, a work which has become the standard text book in America and Great Britain. In 1850 he became professor of Biblical literature in the theological seminary of Rochester, but resigned in 1857, and removed to Brooklyn, to devote himself exclusively to the labor of Biblical revision, in the service of the American Bible union. His work in this department consists of revised versions, with critical and explanatory notes, of "The Book of Job" (1857), "The Gospel by Matthew" (1860), "The Book of Genesis" (1868), "The Book of Psalms" (1868; also, with some additional notes, in the American edition of Lange's "Commentary," 1872), and "The Book of Proverbs" (1872). In 1860 he published "Βαπτίζειν: its Meaning and Use philologically and historically investigated." He is now (1873) a member of the Old Testament company of the American committee, cöoperating with the committee of the convocation of Canterbury, England, in the revision of the authorized English version of the Bible. **II. Hannah Chaplin,** wife of the preceding, born at Danvers, Mass., in 1809, died in Brooklyn, N. Y., Feb. 18, 1865. She was the daughter of the Rev. Jeremiah Chaplin, president of Waterville college, and was married to Mr. Conant in 1830. She was a frequent contributor to literary and religious periodicals, and in 1838 became editor of the "Mother's Journal," a monthly periodical. In 1844 she translated "Lea, or the Baptism in the Jordan," from the German of Strauss, the evangelical court preacher of Berlin. In 1850–'52 she translated the commentaries of Neander on the Epistle of Paul to the Philippians, on the Epistle of James, and on the first Epistle of John. In 1855 she wrote "The Earnest Man," a biographical sketch of the missionary Judson; and in 1857 translated from the German "The New England Theocracy," a sketch of the early ecclesiastical history of New England, by Uhden. Her most elaborate work is "The English Bible; a History of the Translation of the Holy Scriptures into the English Tongue" (New York, 1856).

CONCAN, North and South, a maritime tract of the Bombay presidency, British India, extending from the Portuguese settlement of Goa on the south to the river Damaun on the north, bounded W. by the Indian ocean and E. by the Ghauts; area, about 1,000 sq. m.; pop. about 1,500,000. The surface is rugged, and the mountains on the E. frontier attain in some places an elevation of 4,700 ft. Deep ravines and thick forests occupy the E. portion, whence the surface slopes by degrees toward the seacoast, where the mean elevation is not more than 100 ft. Part of the country is fertile, populous, and susceptible of high cultivation. One of the most remarkable characteristics of the climate is the violence of the monsoon rains, the mean annual fall in some places amounting to 239 inches. There are numerous bays and harbors, which for ages afforded secure retreats to pirates. The Great Mogul maintained a fleet for the purpose of checking them, the Portuguese frequently attacked them, and from the year 1756 numerous expeditions from Bombay were despatched against them by the British; but the piratical system was not wholly suppressed till 1812. When the Hindoos conquered the country they gave it to a tribe of Brahmans, from whom it was wrested by the Mohammedan kings of Bejapoor. In the 17th century it passed into the possession of Sevajee, the founder of the Mahratta empire. Toward the close of the same century the pirate chief Conajee Angria established a kingdom here, extending 120 m. along the coast, and inland as far as the Ghauts. In 1756 most of this territory was restored to the peishwa by the united British and Mahratta forces. North Concan, which is inhabited by wild uncivilized tribes called Bheels, was once held by the Portuguese. The territory was ceded to Great Britain in 1817. South Concan passed under British rule, partly by cession, partly by conquest, in 1818.

CONCENTAINA, a town of Spain, in the province and 28 m. N. of the city of Alicante; pop. about 6,600. It has manufactures of linen,

woollen, paper, and soap, and an annual fair which is one of the largest in Spain.

CONCEPCION. **I.** A S. province of Chili, bounded E. by the Andes and W. by the Pacific, and having the river Itata on the north and the Biobio on the south; area, about 3,600 sq. m.; pop. 155,382. The soil is fertile and the climate delightful. The cereals and various kinds of fruits are produced in abundance. Among the chief exports are timber, lumber, hides, salted beef, and tallow. Coal of an inferior quality is mined in large quantities. **II.** The capital of the province, situated on the right bank of the Biobio, 7½ m. from its mouth, and 270 m. S. S. W. of Santiago, in lat. 36° 49′ 30″ S., lon. 73° 5′ 30″ W.; pop. about 15,000. It is a well built city, with wide streets crossing at right angles. Near the centre is a square with a fine fountain. Among the principal buildings are a handsome cathedral, a number of churches and free schools, an orphan asylum, a lyceum, theatre, prison, hospitals, and barracks. It is the seat of a bishop. Its port, Talcahuana, about 12 m. distant, on the S. W. side of Concepcion bay, is one of the best in Chili. It has been rebuilt entirely since the earthquake of 1835, and now contains about 5,000 inhabitants, and a number of churches and schools. A railway from Talcahuana to Chillan, 112 m., now constructing, will materially increase its importance. The bay of Concepcion is shut in by the island of Quiriquina, on each side of which is a good channel, and furnishes an extensive and safe anchorage.—Concepcion was founded by Pedro Valdivia in 1550, on the S. side of the bay. It was burned by the Araucanians several times, and suffered severely from earthquakes. After the earthquake of 1751 it was rebuilt on its present site. In 1823 the Araucanians again destroyed a part of it, and it was nearly ruined by the earthquake of 1835.

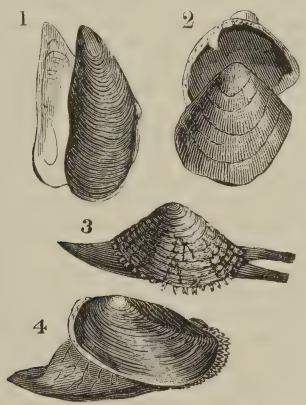
CONCH (Lat. *concha*, a shell), a name given to many univalve shells, of the families *strombidæ* or wing shells, *pyrulidæ* or fig shells, *fasciolaridæ* or band shells, &c. The name is also applied to the genus *triton*. The first named make curious egg cases, like flattened disks, attached in considerable numbers to a string on one side; the strings are sometimes two feet long, and are the favorite food of many carnivorous mollusks. These animals were doubtless eaten by the American aborigines, as their shells are numerous in the Florida shell heaps, and, though very tough, they are now eaten by the poor. Some of the shells are valuable for making cameos; and the South sea islanders use the sea conch (*triton*) as an instrument of music, blowing into the shell through the broken apex, thereby producing a loud and mellow sound. It is a species of sea conch which is represented as used by the god Triton. In many rural parts of the United States conchs of the genus *strombus* are used in place of dinner bells or tin horns, to call persons from a distance.

CONCHA. **I. José de la,** marquis of Havana, a Spanish soldier and statesman, born in Cordova de Tucuman, Buenos Ayres, in 1800. He took part in the war against the patriots in South America and against Don Carlos in Spain, became lieutenant general in 1839, and was captain general of the Basque provinces from 1843 to 1846. About this time he was placed at the head of the Spanish cavalry, and in 1849 was appointed captain general of Cuba, where he distinguished himself by his energy and the reforms he effected. He was removed shortly after the insurrectionary attempt of Gen. Lopez in 1851, and on his return to Spain published a valuable statistical work on Cuba. He joined his brother in opposing the government, and was banished from Spain in January, 1854. Subsequent to the July revolution of the same year he was reappointed captain general of Cuba, but was recalled on the return of Narvaez to power in 1856. He was subsequently senator, ambassador in Paris, and member of the Miraflores cabinet. On the outbreak of the revolution of September, 1868, he was appointed by Queen Isabella prime minister, and exercised the office until she crossed the frontier into France, when he followed her into exile. **II. Manuel de la,** marquis of Douro, brother of the preceding, born in Madrid in 1794, died June 28, 1874. He fought in early life against Napoleon and the revolted Spanish colonies in South America, and afterward against Don Carlos. As a member of the cortes, he gave his support to Maria Christina and Isabella, and successively to the administrations of Espartero and Narvaez. In 1843 he was commandant in Valencia and Murcia, and in 1844 captain general of Catalonia. In 1847, during the complications with Portugal, he was put in command of 6,000 men, and took possession of Oporto, by which victory he earned his title. In the same year he escorted Maria Christina to Paris, and on his return to Madrid resumed his seat in the cortes, where he was a conspicuous member of the ultra conservative party. Subsequently he was reappointed captain general of Catalonia. Having issued at the end of 1853, in concert with O'Donnell and Bravo Murillo, the famous protest against the policy pursued by the government, he was banished in January, 1854, and repaired to Paris; but he was recalled by the revolution of July of that year. He was made inspector general of cavalry and marshal; but in 1856, when Narvaez came again into power, he was compelled to relinquish his positions. In 1874 he commanded the army against the Carlists, and was killed in the battle of Estella. A work by him on infantry and cavalry tactics is the accepted text book in Spain.

CONCHAS. See Conchos.

CONCHIFERA (Lat. *concha*, Gr. *κόγχη*, a shell, and *fero*, to bear), a class of mollusks including all the bivalve shells, as oysters, clams, scallops, &c.; they were called *lamellibranchiata* by De Blainville. They are next to the univalves

in variety and importance, and are invariably aquatic. They are all inhabitants of the sea, excepting a few widely scattered genera, live on every coast, and are found in every climate. The shells of the bivalves are united at the back by an elastic ligament and articulated by a hinge, which is sometimes furnished with teeth shutting by the side of each other and acting much like the common butt hinge. The valves are closed by strong muscles which pass from one valve to the other, and when these are relaxed the shells open spontaneously by the contraction of the cartilage. After the death of the animal, when the muscles lose their power, the elasticity of the ligament causes the valves to gape wide, more so than during the life of the mollusk. (See CONCHOLOGY.) The mantle, which is a conspicuous part of the animal, is a broad membrane which lines all the interior of the shell and encloses the whole body. Its edges are more or less fringed, and are either free, partly united, or entirely so, excepting a passage for the foot before and for the siphons behind. The foot is a muscular mass which may be protruded from the shell, and serves as the organ of motion. In *nucula* and some others the foot is deeply cleft, and capable of expanding into a disk like that on which the snail glides; while in the mussel, pearl oyster, and others, which habitually spin a byssus or thread of fibres by which they attach themselves permanently to substances, the foot is finger-like and grooved, and serves only to mould and fix the threads of which the byssus is composed. The branchiæ or gills are arranged somewhat like ruffles behind the foot, enveloping the abdominal mass. These are the respiratory organs, but they serve also another and very important purpose. Firmly fastened to rocks and other substances, or at best moving slowly and awkwardly in their muddy or sandy beds, these animals have not the power of following their prey, nor are they furnished with the means of seizing it, but the branchiæ convey to the mouth whatever particles the current brings, whether organic or inorganic, animal or vegetable; upon these the mollusk lives. The water is furnished to the branchiæ by one siphon, while another serves as a passage for the excrement. The branchial siphon has its orifice surrounded by a double fringe. When unmolested, a current flows steadily into the opening of this siphon, while another current rises up from the exhalant tube. The burrowing species have a strong foot, with which they bore into the sand and clay upon the shore so as to entirely conceal themselves. They never leave these abodes, and often become fossilized in them. The *teredo* or ship worm, and some other borers, which were formerly included among the univalves and multivalves, are now arranged in this class. The interior of the shell is marked with characters derived immediately from the shellfish, and affording a surer clue to its affinities than those which the exterior presents. The structure of the hinge characterizes both families and genera, while the condition of the respiratory and locomotive organs may be to some extent inferred from the muscular markings.



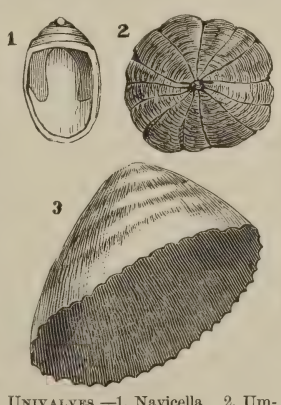
1. Mussel. 2. Nucula. 3. Venus verrucosa. 4. Anodon anatinus.

CONCHO, a W. county of Texas, bounded N. E. by the Colorado river, W. by Bexar district, and intersected by the Rio Concho and other streams; area, 1,025 sq. m.; yet unsettled. The surface is broken and rocky. Timber is scarce. The climate is dry and salubrious.

CONCHOLOGY (Gr. *κόγχη*, a shell, and *λόγος*, a discourse), the science which treats of the testaceous parts of the mollusca. Formerly these were made the basis for classifying the animals to which they belong; but the enlarged study, introduced by Cuvier, of the anatomical structure of the bodies contained within the shells, has developed an apparent want of correspondence between the latter and the organization of the more important parts, upon which the habits and true character of the animal must mainly depend. (See MOLLUSCA.) In the old classification, molluscous animals possessed of the same peculiarities of internal structure were widely separated by the differences of their external covering; some animals, as the cirripedes, comprising nearly all the old division of multivalves, were included with the mollusca because of their shelly covering, and thus they continued until their structure at last was found to refer them to the articulata; and some mollusca possessed of no shell, as the nudibranchs, would properly be excluded from the arrangement that comprised others hardly differing from them, except in being provided with this appendage, or perhaps but a poor apology for it. And then, as some species have the faculty of leaving and returning to their shells, it might occur, in ignorance of the relations of each part to the other, that the shell should be referred to one department and the body to another of the animal kingdom. Indeed, by reason of the changes of form and color that take place in the growth of some shells, the same species have been described at different ages of the individual under different names.

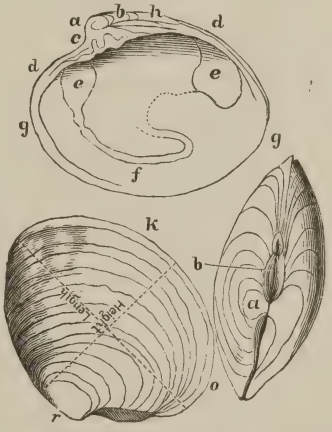
But though the important divisions of the mollusca are now based on their internal organization, the study of the shells is nevertheless not to be neglected in the pursuit of the general science of malacology, or the study of the mollusca; for the minor divisions into species are still generally controlled by differences in the forms of the shell; and in the important department of palæontology, it is only the outer coverings of the ancient mollusca, or casts of these in more durable materials, that are presented to us, by which we may determine their character.—Shells consist of carbonate of lime secreted by the animal, and intermixed with some animal matter; they are usually heavier where calcareous formations prevail, the mollusca which bear them also being more abundant than in granitic and other districts deficient in lime. The secretion is first of an albuminous matter through the pores of the outer mantle of the embryo mollusk; this is generally succeeded by an admixture of crystalline particles of carbonate of lime; new layers form beneath these, and the shell gradually gains thickness and extension. In the species in which it is least developed it appears as a hollow cone or plate, which serves as a protection to the breathing organ and heart. The mantle it covers in other species is in part the same important organ. The protuberances and ridges seen on many univalve and bivalve shells appear in the course of their growth by the margin of the mantle turning out at a considerable angle, and thus building up a plate in this position for a certain distance. This growth then ceases, the mantle retracts, or may be regarded as changing itself into the shelly layers, and then it extends in the original direction, carrying out the shell with it, till it turns again to form a second plate or ridge; and so the process goes on. The spines upon shells are produced by the mantle sending out from its margin tentacula, which secrete from their surface the calcareous matter, and thus form slender tubes. These become solid, as the fleshy matter, while it retracts and is absorbed, continues still to deposit the shelly layers. As each successive layer in the growth of shells extends beyond the line of the next older layer, the edges of these must appear upon the outer surface as marked lines of growth. Many mollusks possess the power of altering and enlarging their shells to adapt them to their growth, which they appear to do as if by an intelligent will. Thus the murices remove the spines that interfere with the extension of the shell; and others enlarge the aperture, when it has become too contracted for the body, by wearing away or dissolving its walls. The growing *cypræa* removes the inner wall of its shell, and extending its mantle around upon the outside, adds there, in successive layers, more than was taken from within. The shell not only thus changes in size, but the form of the adult becomes altogether different from that of the young. The distinguishing marks of shells are the number of parts of which they are composed, and their peculiar forms and prominences. They possess also different textures and various colors, often of great beauty. Some consist of a single piece, as those univalves which are not provided with the horny or calcareous operculum, such as is attached to the posterior part of the foot of other species, and which, when the foot is drawn in, serves to close the aperture as with a tight and perfectly fitting cover. In these the shell is in two pieces; so also is it in most of the bivalves, and the resemblance of the arrangement has led some conchologists to suppose that the operculum may be regarded as the equivalent of the dextral valve of the conchifera; but the anatomical structure forbids this conclusion. In the *terebratula* the shell is in three parts, and in some of the pholades and chitons it is in four or more. The peculiar forms of the aperture in some of the univalves are found to bear constant relations to the internal organization of the animal, and so far are therefore to be relied on as indicative of its habits and character. Such are the grooved and notched siphons in some of the spiral univalves peculiar to marine mollusca, which breathe by two gills furnished with a fleshy tube for supplying to them the water. The textures of shells are described as porcellanous, pearly or nacreous, fibrous, horny, and some are glassy and translucent. These textures are produced by the different manner in which the particles of mineral and animal matter are arranged, which is best exposed when the shells are partially decomposed by the disappearance of the animal substance, a condition often met with in fossil shells. In some of them the complicated arrangement of the three strata of plates, which make up the porcellanous structure, is exhibited in the broken edges of the cypræas, cones, &c. The outer and inner layers present the edges of the plates to the surface, while those of the middle one lie in groups at different angles. Each plate is composed of minute prismatic cells, arranged at angles of 45° with the plane of the plate, and these meet the cells of the adjoining plates at right angles. The animal matter of the porcellanous shells is soluble gelatine. The pearly shells are in alternating layers of very thin albuminous membrane and carbonate of lime, which by their minute undulations give the pearly lustre. This structure is the least permanent, and in some geological formations the shells that were provided with it have disappeared, leaving only their casts, while those of fibrous texture are preserved unchanged. This texture is produced by an arrangement of prismatic cells of carbonate of lime, which extend continuously through the successive layers that make up the shell. It is well exhibited in the heavy fossil *inoceramus*, which sometimes is found falling into fibrous blocks, the grain transverse to the surface of the shell. The oyster shell, in which the prismatic cells are irregularly ar-

ranged in the successive layers, separates into plates parallel with its surface—an example of laminated structure. In the *brachiopoda* the structure is so peculiar that it may be detected in the smallest fragment of shell; it consists of elongated and curved cells matted together, and often perforated by circular holes arranged in quincunx order. Colors, however beautifully exhibited upon the surfaces of shells, are to them no more distinctive features than to the minerals and flowers upon which they are also brilliantly displayed. They are most richly developed upon those surfaces most exposed to the light, and in the class of shells that inhabit shallow waters. In some instances they have proved as permanent as the shell itself, being preserved in a few of the fossils of various geological formations, even as old as those of the Devonian period. The color is usually limited to the surface beneath the epidermis, which is the membrane of animal matter coating the entire shell, and protecting it from the action of destructive chemical agents. But some of the shells of porcellanous texture present different colors in adjoining layers, a peculiarity which adapts them for the carved work in colors described in the article CAMEO.—The shells of a single piece appear in various forms; most of them are in spiral convolutions, which form logarithmic curves. In some the spire is wound around an axis called a *columella*, which is entirely concealed within the whorls; in others these wind about without coming in contact, the shell then resembling a corkscrew. Some are smooth conical bodies, terminated at the base of the cone by an insignificant spire, and with a long aperture on one side. In some the spiral form is very prominent in the young individuals, and is afterward entirely concealed under the successive layers of growth. In a few instances the convolutions are so flattened that no conical form is produced. The argonaut is an example of the last, a shell almost as delicate as paper, and so light as to be no impediment to the animal's rising to the surface by means of its distended air cells. The *haliotis* (sea-ear) is also an example of a very flat and in this instance obscure spire. The aperture of this shell is open, resembling the ear in form, whence its name. To the animal the shell is a covering shield, which protects him as he draws it down, and holds by his broad foot firmly to the rock. Many other



UNIVALVES.—1. Navicella. 2. Umbrella. 3. Patella.

mollusca similarly provided are distinguished by shells shaped like a shield, as *umbrella;* or like a boat, as *navicella;* or of more conical form, as the *patella* or limpet. The univalves take also the form of a tube open at each end.—In describing shells, they are supposed to be in the position which the animals assume when in motion and progressing from the observer. The aperture of the univalves is downward, and the spire points backward and upward; the two sides are distinguished as right and left. The whorls wind obliquely from the apex of the spire from left to right in the greater number of species; those in which the direction is reversed are known as reverse or sinistral shells. Individual exceptions occur in the species of each group. Bivalve shells of the class *conchifera*, in which all are included that breathe by two pairs of gills, take when in motion a position with the hinge of the valves upward. Two prominences called the umbones are observed, one on each valve bending toward each other; the beak or apex of each of these corresponds to the apex of the spire of the univalves. It often inclines toward one end of the shell; this is always the anterior extremity, and the opposite the posterior. The latter is also marked in many bivalves by a notch or sinus in the pallial impression upon the inner surface of the shells, always opening, when it occurs, toward this extremity. The pallial impression is the mark of the margin of the mantle where it was attached to the shell. The position of some bivalves, as the large scallops, oysters, &c., is indicated only by the large muscular impression which is always on the posterior end unless it be between the umbones. The bivalve being then placed in its natural position for progressing from the observer, the valves are designated, one as the right, the other as the left. If the two be of the same size and



BIVALVE SHELL.—*a*, *a*, bosses; *b*, *b*, hinges; *c*, principal teeth; *d*, *d*, lateral teeth; *e*, *e*, muscular impressions; *f*, pallial impression; *g*, *g*, sides of the shell; *h*, ligament; *k*, ventral edge; *o*, front edge; *r*, umbo.

shape, as is the case in the unattached conchifera, the shell is said to be equivalve; but when one valve is attached to a foreign body, this is larger and deeper than the other, and the shell is said to be inequivalve; if one end be longer than the other, the shell is inequilateral. This measurement is made along the horizontal line of greatest length from each extremity to the vertical line dropped from the highest point of the umbones to the base. The anterior end is usually found to be shorter than the posterior. The upper margin is called the dorsal, and the lower the ventral. The breadth is the length of the vertical line from the dorsal margin to the base, and the thickness is the distance between the valves when closed. The valves may join closely together, or gape open at one or both ends, or even be furnished with a vertical opening by corresponding notches in the margin of the valves. These peculiarities of the form of the shell have relation to the internal organization of the animal, the openings being one for the purpose of allowing the protrusion of the foot for propelling the shell, another for the byssus by which it is firmly anchored, and another for the long siphon, the respiratory organ, which serves to inhale the water to be filtered by the gills, and then to pass it back. Bivalve shells are strongly marked on their inner surface, near the dorsal margin, by the depressions for the muscles which draw the valves together, and some present prominent apophyses for the attachment of these adductors. The shells also bear the impressions of the attachment of the foot, byssus, siphons, and mantle. But the most important marks are the articulations of the hinge, called teeth. These, by their different numbers and positions along the dorsal margin, serve as distinguishing marks of species, and even of genera; a distinction to which they are properly entitled from the fact that their varying forms indicate corresponding changes in the organization of the soft parts. The ligaments which hold the valves together are an external horny one lying behind the umbones, which is stretched by the closing of the valves, and an internal short fibrous one, which is compressed endwise as the valves are drawn together by the adductor muscles. As these are relaxed by death or otherwise, the shells are pushed partly open by the elasticity of the cartilage. The marks upon the inner surface of the valves left by these organs are important features in the description and classification of bivalve shells.—In the embryo of these animals the umbones are the first formed portions of their shelly covering. In most genera this is carried out with the growth of the body, so as always to serve as its complete protection; but in others it attains to the extent of only a partial covering, and in these instances other curious provisions are made for completing the necessary defence. The teredos are slender worm-like animals, that sometimes attain a length of 2½ ft., and one species even reaches 3 ft. By close observation only are the two shells perceived at the larger extremity of this long siphonal tube. They cover the visceral organs, but admit between them in front the fleshy foot, by means of which the creature is able to burrow into wood. Here he excavates long tubes adapted to his form, and finishes them with a smooth calcareous lining, thus providing an artificial covering for the unprotected portion of the body. Securing himself permanently to the inner extremity, his communication without is thereafter only through the siphonal tube. The pholades burrow into limestone and other stony substances which are less hard and tenacious than their own valves; other shells even are penetrated by them. The front portion of these is ribbed like a rasp, and is thought to answer the purpose of one in forming cavities. The whole shell is of unusual hardness, its structure more resembling that of aragonite than of calcareous spar. Being thin and without ligaments, it is strengthened by accessory valves upon the dorsal margin. In some attached bivalves, as the oyster, the embryonic umbo often takes the form of the surface to which the valve is fastened, and this form is afterward retained. With the growth of the animal the original shield loses its importance, and as in the univalves the spire, which corresponds to the umbo, is often deserted, and becoming dead and brittle falls away (in which case it is said to be decollated), so in the bivalves the umbones wear out and the layers of shell scale off, leaving the summit ragged and unsightly; in this condition they are said to be decorticated. The fresh-water univalves and bivalves are especially subject to this erosion. The injury that might result from this removal of the shell is obviated in some cases by the deposit of new layers within, or by the construction of partitions, or, as in some tubular shells which continue to advance upward with the growth of the coral that encloses them, by filling the deserted portion with solid calcareous matter. Some peculiarities of the shells of the other class of bivalves, the *brachiopoda* (by some recent authors placed among the articulates), are given under that head. These valves are distinguished as dorsal and ventral, instead of right and left. The ventral is commonly the larger one, and is surmounted by a prominent perforated beak, through which the organ passes by which it is attached to foreign bodies. This valve resembles in shape the antique lamps, and the hole in the beak corresponds to that for the wick; they are hence known as lamp shells.—The class *cephalopoda* includes many genera whose shells are concealed within the soft parts. Many of these are known only as fossils, and nothing is left to indicate their former existence but the numerous stony pointed bodies and pens, which were at the same time the skeleton and partial receptacle of the soft portion of the animal. One of these calamary or squid-like fossils, *belemno-*

teuthis, found in the Oxford clay at Chippenham, England, was so perfectly preserved that the muscular mantle, fins, ink bag, funnel, eyes, and tentacles with their horny hooks, were all distinguishable. A similar discovery, described by Buckland, is noticed in the article BELEMNITE. Some of the fossil ink bags found in the lias are nearly a foot in length, and are invested with a brilliant pearly layer; the ink forms excellent sepia. In the *sepiadæ* of this class the shell is the spongy calcareous substance known as cuttle bone. It is a broad laminated plate, as long and wide as the body in which it is enclosed. It grows to an extraordinary size, one being noticed by Banks and Solander in the Pacific, near the equator, which was about 6 ft. in length. To the same class belongs the *nautilus pompilius*, the only living representative of the order *tetrabranchiata*, of which fully 1,400 fossil species are known, among which are the ammonites. Its light shell is separated into air chambers by numerous partitions, which greatly increase its strength and add but little to its weight. The four species of argonauts are also cephalopods; their shell is thin and translucent like paper, and serves as a boat to the animal that sits unattached within, his long tentacles stretching forth from the projected head, and the short funnel beneath it forcibly spurting forth water, the recoil of which sends the animal backward. This is the shell which Aristotle called the nautilus, and fancifully described, as many others have since, under the name of paper nautilus, as floating in fine weather upon the surface with its sails spread to the breeze.—The whole number of species of molluscous animals known is estimated at about 12,000 recent and 15,000 fossil. Many of the living species furnish wholesome food, and some are esteemed as delicacies. The shells are principally composed of carbonate of lime, the other ingredients, of the oyster for instance, being 1·2 per cent. of phosphate of lime, and 0·5 of animal matter; the shells of the brachiopods consist largely of phosphate of lime. They are therefore well adapted for being burnt to quicklime, used as calcareous fluxes in smelting ores, or applied as fertilizers to the soil. The marine shells, by the immense numbers in which they are produced, perform an important office in abstracting from the sea water its excess of calcareous matter, and thus aiding to maintain its purity. As objects of beauty, shells have always been admired, and frequently appropriated to uses as ornaments. Some varieties were used by the Athenians as ballots, with the name upon them of the person to be banished, whence the term ostracism. Some shells, as the *cypræa moneta*, have served the purposes of coin among rude nations. Others, as the marine *avicula margaritifera* and the fresh-water *unio margaritiferus*, are noted for the pearls which are secreted between their valves around some foreign substance. Mother-of-pearl is the polished shell of nacreous structure. Rare species of shells are highly prized by collectors, and single specimens have been sold for exorbitant sums. Woodward ("Manual of the Mollusca") cites the sums once paid for such, as 100 guineas for a *carinaria*, now worth only 1*s.*; 40 for a wentletrap, now worth 5*s.* The *conus gloria maris* has fetched £50 more than once, and *cypræa umbilicata* sold for £30 in 1850.

CONCHOS, or **Conchas,** a river of Chihuahua, Mexico, which rises high up in the Sierra Madre, flows S. E., N. E., and then N., through a beautiful tract of country, comprising the richest of the table land of Chihuahua, and empties into the Rio Grande near Presidio del Norte, in lat. 29° 30′ N., lon. 104° 40′ W., after a course of about 350 m. It is the largest tributary of the Rio Grande, and very little inferior in size to that river itself. Its principal branches are the Florido, Buenavista, San Pedro, Chihuahua, and Balleza.

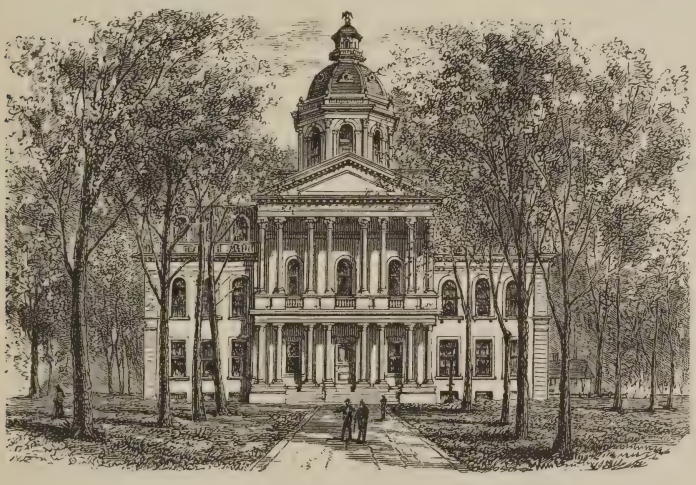
CONCINI, Concino. See ANCRE, MARSHAL D'.

CONCLAVE (Lat. *cum*, with, and *clavis*, key), the apartments where the cardinals of the Roman Catholic church assemble for the election of a new pope, or the assembly of cardinals shut up for such election. Many reasons have led to the bestowing on the college of cardinals the exclusive right of electing the pope, as well as to the reclusion in which they are kept while exercising that right. During the era of persecution the position of bishop in Rome or elsewhere was one of great peril, for which none but the most eminent in virtue were likely to be chosen by the clergy and people. But already in the age of Constantine the play of human passions became frequently but too apparent both in the men who aspired to the episcopal office, and in those in whose gift it was. In proportion as the church increased in numbers, wealth, spiritual influence, and political power, so did the choice of men to fill such great sees as those of Rome, Constantinople, and others, become the occasion of most unseemly intrigue and strife. The emperors, from motives of policy, wished to have seated in the papal chair men who would subserve their own interests; and from first protecting the liberty of ecclesiastical elections, they soon came to oppress it. Justinian claimed the right of confirming the choice of the Roman clergy and people, and this in practice meant the setting it aside. It was further maintained that Adrian I. had bestowed on Charlemagne the right of choosing the pope; but be that as it may, the German emperors constantly interfered in papal elections, causing thereby ever-recurring disorders, delays, divisions, and sometimes bloodshed. To protect the freedom of the electors, and to put a stop to these scandalous contentions, Nicholas II. in 1059 decreed that in future the election of the Roman pontiff and the administration of his see during the vacancy should be the exclusive right of the cardinals of the Roman church. After a violent struggle with the imperial power, these statutory dispositions triumphed through the energy

of Gregory VII. In 1179 Alexander III. solemnly confirmed the decree of Nicholas, prescribing that a two-thirds vote should be necessary for a valid choice. Meanwhile no statute existed compelling the cardinals to reclusion while discharging their office of electors; but several instances are on record where such reclusion was resorted to with the most beneficial result. The election was thus made in perfect freedom from all outside violence and intrigue. Honorius III. was elected two days after the death of his predecessor, in consequence of the strict reclusion to which the cardinals submitted; while Gregory X. was only chosen after a vacancy of two years and nine months, because the electors were not shut up. These two extreme cases induced Gregory in 1274, during the council of Lyons, to decree a strict reclusion thenceforward, with all the other conditions which have substantially continued down to the present day. After Gregory's death these statutes were repeatedly violated, until the evil thence resulting culminated at the death of Nicholas IV. in 1292, when Celestine V. was chosen after an interregnum of two years and three months. Celestine renewed before his abdication, with increased solemnity and rigor, the pontifical constitutions on the conclave, and had the satisfaction of seeing them carried out to the letter in the conclave which elected Boniface VIII. Boniface, in his turn, confirmed the constitution of Celestine by one of his own, and both were embodied by him in the 6th book of his Decretals. During the council of Trent this reclusion, which had become the uniform law of the church, was again the subject of the most severe and minute legislation by Pius IV. He regulated everything pertaining to the lodging of the cardinals in conclave, to their seclusion from all intercourse with the world outside, their diet, attendants, and the manner of voting. Gregory XV. in 1621 decreed strict reclusion as an absolute condition for validity. Clement XII. in 1732 renewed and confirmed these disciplinary statutes, adding some new rules concerning the administration of the Roman see during its vacancy.—The whole ceremonial observed in the conclave may be thus briefly described from Patricius (Patrizzi) and modern authorities. Nine whole days are given to devotional exercises for the eternal repose of the deceased pontiff. On the ninth take place his obsequies, and on the tenth the cardinals assemble in the Sistine chapel, where a mass in honor of the Holy Ghost is celebrated by the cardinal dean. This over, the cardinal dean intones the *Veni, Creator Spiritus*, and the sacred college, with their officers and attendants, go in procession to that part of the Vatican set apart for their reclusion, immediately adjoining and including both the Sistine and Pauline chapels, with three courts and the surrounding apartments. On their arrival in the Pauline chapel, the cardinal dean chants before the altar the prayer *Deus, qui corda fidelium*, and the papal constitutions on conclaves are read, all present swearing solemnly to observe them. Formerly it was the custom to begin from that moment the rigorous reclusion prescribed by the pontifical decrees. In modern times it only commences on the evening of the tenth day. As soon, however, as the signal for the prescribed reclusion is given, all meet in the chapel, cardinals and conclavists (all the authorized officers and attendants in the conclave), the oath of fidelity and secrecy is administered to conclavists and guardians, and three cardinals (chosen one from each of the three orders of bishops, priests, and deacons), accompanied by the high chamberlain (*camerlingo*) and the first master of ceremonies, make a scrupulous examination of every room and corner from cellar to garret, in order to see that there are no intruders. The only door of communication having been then closed with two strong locks on the outside and two within, the conclave is formally begun. The cells in which the electors are locked up are simple in their construction and their furniture. They are draped in purple for the cardinals created by the last pope, and in green for all the others. The following daily routine is observed as long as the reclusion lasts. At 6 o'clock in the morning a master of ceremonies knocks at the door of each cell to warn the inmate to proceed to the chapel. At 7 the mass of the Holy Ghost is celebrated, after which all except the cardinals withdraw. The cardinals recite the penitential psalms and the litany of the saints, and a first vote is cast. This over, the fathers retire to their cells, breakfast, and take a short walk in the open air. At 2 o'clock P. M. they again meet in the chapel for a second ballot, after which they dine, walk out if they choose, or retire to their respective cells, where a religious silence is observed after dark. Gregory XV. decreed that the cardinals in conclave should vote by secret ballot. Papers of uniform size, texture, and color are distributed to the cardinals; they are folded in such a manner that the part on which each elector writes his own name cannot be opened, while that on which he inscribes the name of his candidate can. The ticket is then folded, closed with sealing-wax, and stamped with the common seal of the conclave. The elector, then kneeling, takes the solemn oath prescribed, and deposits his vote in a chalice placed on the altar. The votes of such as are detained by sickness in their cells are taken with every necessary precaution and formality. When all have voted, three cardinals, chosen one from each order in the sacred college, take the papers one by one from the chalice, read them aloud, and register them, each in succession. As soon as a two-thirds vote is obtained, the fact is announced. The elect, if he accepts, immediately chooses the name by which he is to be known, and receives the first homage of all present. He is next clad in the vestments and insignia of his office, and receives homage

a second time. Thereupon the first in the order of cardinal deacons, preceded by a cross-bearer, goes to a balcony in the Vatican and proclaims the name of the new pope.

CONCORD, a city and the capital of New Hampshire, and the shire town of Merrimack county, situated on the Merrimack river, about 45 m. from the Atlantic coast, and 60 m. N. N. W. of Boston. The Merrimack divides the city N. and S., and the Contoocook winds along the W. half of the N. border. At their confluence is a small island, famous as the place where Mrs. Hannah Dustin and her nurse, Mary Neff, with the aid of a boy, in 1697 killed ten Indians who had taken them captive from Haverhill, Mass. The main part of the city is situated on the W. side of the Merrimack, and is well laid out. The streets are shaded with elms and maples. Fisherville, a village near the junction of the two rivers, lies chiefly in Concord. Millville, a small village 2 m. S. W. of the state house, is the seat of a school for boys. The Merrimack is bordered by wide intervales, which are overflowed by freshets. Four railroads centre in the city, viz.: the Concord, connecting with Nashua, Lowell, and Boston; the Concord and Claremont; the Northern, connecting with Lebanon; and the Boston, Concord, and Montreal, with Plymouth and Haverhill. The population at decennial periods has been as follows: in 1810, 2,398; 1820, 2,838; 1830, 3,702; 1840, 4,903; 1850, 8,584; 1860, 10,896; 1870, 12,241. The state house was erected in 1816, costing $80,000, and rebuilt and enlarged in 1866, at a cost of $175,000. It is of granite, hammered by the convicts in the state prison, which is located in the city. It stands in a beautiful park ornamented with shade trees. The centre of the building is 50 ft. front by 57 deep; the wings are each 38 ft. front by 49 deep; the whole making a parallelogram 126 ft. in length by 49 in width, with the addition of a projection of 4 ft. in the centre of each front. The state asylum for the insane stands on an eminence about half a mile S. W. of the state house. The buildings are of brick, and are well adapted to the purpose. A large farm is connected with the institution, and a considerable portion of the provisions needed for the inmates is produced by the labor of those able to work in the field. There are usually from 225 to 250 inmates. The city hall is a large brick building. Water works, costing about $200,000, were constructed in 1872, and the city is now supplied with pure water from Long pond, 4 m. from the state house, and 120 ft. above Main street. Extensive quarries of beautiful white fine-grained granite exist on the line of the Concord and Claremont railroad, within the city limits. Large quantities, cut and uncut, are shipped to Boston, and thence are exported to southern ports for building purposes. Great water power might be furnished at Sewall's falls, in the Merrimack, 2 m. above the business centre, and at Garvin's falls, 2 m. below. At Fisherville there is also great motive power, partially improved by manufactories erected in Concord and the adjoining town of Boscawen. The city is especially noted for its manufacture of carriages, which are largely exported. There are 120 manufactories of various kinds, employing steam engines having 720 horse power, and water wheels with 734 horse power; capital, about $2,000,000; number of males employed, 1,800, and of females, 350; wages annually paid, $1,000,000; value of products, $3,616,000. The value of the most important articles produced in 1870 was: carriages, $550,000; cotton goods, $250,000; woollen goods, $230,000; leather and leather belting, $300,000; foundery products, $250,000; granite, quarried and dressed, $350,000; furniture, $350,000; reed organs and melodeons, $60,000; harness, $150,000; lumber, $90,000; boots and shoes, $100,000; clothing, $150,000; marble, worked, $60,000; products of railway repair and car shops, $300,000; of printing and bookbinding establishments, $150,000; of silversmithing establishments, $75,000. There are also manufactories of sashes, doors, and blinds, of silver-plated ware, of steel carriage springs, &c. Concord is an important centre of trade, possessing two banks, with an aggregate capital of $350,000, and about 250 stores, with a stock



State House, Concord.

in trade valued at over $800,000. The total valuation of the city is upward of $11,000,000. The public schools in 1872 numbered 25, including a high school, with 30 teachers and 1,295 pupils. The public library contains 6,223 volumes, the state library 11,000, and that of the New Hampshire historical society 6,500. There are two daily and three weekly newspapers, and 16 churches.—Concord was originally the seat of the Penacooks, a powerful tribe of Indians. Passaconaway, a sagamore and a friend of the English, resided here. It was settled in 1725, incorporated under the name of Rumford in 1733, and under its present name in 1765, and made a city in 1853.

CONCORD, a town of Middlesex co., Massachusetts, 18 m. N. W. of Boston by the old county road, and 20 m. by the Fitchburg railroad; pop. in 1870, 2,412. The Indian name of the place was Musketaquid, signifying grass ground. It was settled in 1635, and the name Concord is said to have been given it "from the Christian union and concord among the first company." The first inland settlement made in the Massachusetts colony, it was one of the scenes of the labors of the apostle Eliot. In the Indian wars it bore a prominent part, and in 1669 established a military company, which existed down to a recent period. It had considerable part in King Philip's war, 1675–'6. When the people of Boston overthrew Sir Edmund Andros, a company marched to their aid from Concord. To the French and Indian wars that followed the English revolution Concord contributed many men. As early as 1767 the people of Concord made themselves conspicuous for their opposition to the measures of the British government. The first county convention, that of Middlesex, was held at Concord, Aug. 30 and 31, 1774, and consisted of 150 delegates, every town being represented. This convention adopted resolutions that amounted to a declaration of separation, the last recommending the assembling of a provincial congress; they were signed by 146 members. In September some of the people took part in the expedition to Cambridge, whither a British force had been sent. The judges were not allowed to hold court in the town under the new government. Tories were arrested and "humbled." Military companies were formed, and arms and ammunition purchased. The provincial congress of Massachusetts met at Concord Oct. 11, John Hancock presiding. In February, 1775, the colonial government provided for the accumulation of valuable stores for military uses at Concord, under charge of Col. James Barrett of the town. The village had become a place of arms, and this determined the course of events. British spies visited the place, and an expedition from Boston to seize or destroy the stores was resolved upon by Gen. Gage. The provincial congress met at Concord the second time March 22, 1775, and sat till April 15. On the night of April 18 a detachment of 800 men marched from Boston upon Concord (see Lexington), which place they reached at 7½ o'clock on the morning of the 19th. The country had been thoroughly alarmed; the people were employed in removing and secreting the stores, and the military assembled to the number of 180. When the enemy came in sight, some were for resisting them; but as it was thought proper to throw the entire responsibility upon the invaders, this advice was not followed, and the militia fell slowly back, and took post upon the side of a hill to the right. They were at first under the command of Major John Buttrick; but Col. Barrett, his superior, soon arrived on the ground, and ordered the men to cross the North bridge, which was done. The British now had possession of a large part of the town, and while some of them were engaged in destroying arms and provisions, detachments were sent to secure the South and North bridges. A part of those sent to the North bridge went on to Col. Barrett's residence, where they were engaged in the work of search and destruction, when they were interrupted by the attack that was made on their comrades at the bridge. The Americans who had retreated over the North bridge were drawn up not far from it, and were joined by others from several neighboring towns. As it was believed the enemy were burning the village, the resolution was taken to attack them, and by Col. Barrett's command the militia and "minutemen" marched toward the bridge; some of the Acton minutemen took the head of the column, but stood abreast with the Concord minutemen when they halted at the W. end of the bridge. The British drew up on the E. bank, and began to pull up the planks of the bridge. Major Buttrick called to them to desist, and ordered his men to increase their pace. The British desisted, but fired several muskets, as signals, it was supposed; but when the Americans were 10 or 15 rods from the river, a single gun was discharged at them, the ball from which wounded Luther Blanchard, an Acton fifer, and Jonas Brown, a Concord soldier. Immediately a volley was fired, by which Capt. Davis and Abner Hosmer of Acton were slain. Major Buttrick then gave the order to fire, discharging his own gun instantly. The order was promptly obeyed, and a general fusillade ensued from both sides. The British lost several men, two being killed, when they retreated, meeting reënforcements as they marched to the centre of the town. The Americans followed, and took post on the side of the road by which they would have to return to Boston. The companies at Col. Barrett's were interrupted in their operations by the firing at the bridge, and returned to the village without molestation. Those at the South bridge did the same. Meantime, the British had been engaged in acts of violence in the village, directed principally against military articles, such as throwing balls into wells,

&c. The only building fired was the court house, which was not much damaged. Some indignities were offered to individuals, and there was a little pillaging. About noon the retreat commenced, and the enemy were followed along the road to Lexington by the provincials, who inflicted much injury upon them. Concord had five men wounded in the action. So far as the deliberate purpose of the Americans was concerned, the revolution was begun by the determination of the militia officers to march upon the North bridge; and the first order to fire upon the royal troops came from Major Buttrick. In 1835 a granite obelisk, 28 ft. high, including the base, which is 5½ ft. broad, was erected on the spot where the first British soldiers fell, with a suitable inscription. The grave in which two British soldiers were buried, supposed to have been the first who fell in the war, is near the monument. The spot is one of great rural beauty. The road along which the troops marched has been many years closed, and the bridge over which the first volleys of the revolution were exchanged has long since disappeared. During the war Concord contributed largely of men and money to the common cause, and sent great quantities of fuel, hay, provisions, and clothing to the army. Though the population was but 1,300, it had 174 men in the army of 1775; and at later periods of the war its conduct was equally spirited. The money to pay the soldiers was raised by the town. Harvard college was removed to Concord in 1775, when the college buildings at Cambridge were occupied by a portion of the American army then besieging Boston. It returned to Cambridge in June, 1776.—Concord is distinguished by its quiet beauty. The sluggish character of Concord river, which falls into the Merrimack at Lowell, 15 m. distant, after a total course of about 40 m., has prevented it from being turned to manufacturing purposes, and its natural beauties have been preserved. There are, however, a cotton mill and a pail and tub factory. There are good schools, two or three churches, a bank, and an insurance company. The Assabet, which falls into the Concord, not far from the scene of the battle, is a stream of singular beauty, and both have been made familiar to the world by the writings of Thoreau and Hawthorne. The quiet and repose of the place have made it a favorite with men of letters. Ralph Waldo Emerson, grandson of the Rev. William Emerson, who was pastor there in the revolution, and an eminent patriot, resides there; and Hawthorne and Thoreau were also residents of the village. The "Mosses from an Old Manse," one of Hawthorne's finest works, takes its name from the fact that it was partially written, and entirely arranged, in the parsonage house of the Rev. Dr. Ezra Ripley, who was pastor at Concord from 1778 to 1842. A public library building, presented to the town by Mr. W. C. Munroe, was opened Oct. 1, 1873, the library containing 10,267 volumes.

CONCORDANCE, a book which contains all or the principal words that occur in the Bible, arranged in alphabetical order, with references to the book, chapter, and verse in which each occurs, designed to assist the inquirer to find any passage of Scripture of which he may remember one or more words. Concordances of the Hebrew and Greek texts have been made, and of the principal modern translations. The earliest concordances were of the Latin Vulgate, in the 13th century, the first being that of Antonius of Padua, and the second that of Cardinal Hugo de St. Cher. Euthalius of Rhodes made one of the Greek text about the year 1300, which was however lost; and the task was performed again for the New Testament, in the middle of the 16th century, by Betuleius, and for the Septuagint, at the beginning of the 17th, by Konrad Kircher. The latter work was improved by Trommius about 1690, and the former by Henry Stephens about 1600, and still further by Schmidt in 1638. The most recent Greek concordance is that of Bruder (Leipsic, 1843). The first Hebrew concordance was completed by Rabbi Isaac ben Calonymos Nathan about 1438, was printed at Venice in 1523, and again in 1564, and has been improved by Calasio (Rome, 1621), Buxtorf (Basel, 1632), and Fürst (Leipsic, 1837 *et seq.*). All the concordances, except the Hebrew, prior to the editions of the Bible by Robert Stephens (about 1550), which first contained the Greek and Latin texts divided into verses, made references only to chapters, and then indicated whether the passage was near the beginning, middle, or end of the chapter, by the letters *a*, *b*, *c*, &c. The first English concordance was of the New Testament, by Thomas Gybson, prior to 1540. The earliest English concordance of the entire Bible is that of Marbeck (1550). Cruden's "Complete Concordance" (1737, and often since) is the basis of every English concordance since published. The best edition is that of the society for the promotion of Christian knowledge (London, 1859). This, however, is far from complete, many important words being wholly omitted. An "Exhaustive Concordance," by James Strong, is announced (1873) as nearly ready for publication. In "The Englishman's Hebrew Concordance" (London, 1843), and "The Englishman's Greek Concordance" (London and New York, 1848), the words in the original tongues are given in their alphabetical order, but the passages are quoted from the English version.—Similar alphabetical vocabularies of other books than the Bible are termed concordances, as the concordance to Shakespeare, by Mary Cowden Clarke.

CONCORDAT, a treaty or agreement entered into by the see of Rome with a secular prince or government, touching one or more points of ecclesiastical discipline. The Roman Catholic church is governed by her own laws and observances in all matters not definitely settled by Christ or his apostles. (See CANON LAW.)

Concordats are simply the arrangement by treaty of such laws and observances as lie outside the verge of divine law; the ecclesiastical power whereby similar laws and observances were established moulding and modifying them to meet the varying mutations of human affairs, and the different requirements of time and place. The name was probably first used in 1418, being applied to the stipulations entered into by Martin V. on the one side, and England, Germany, and France on the other. The most notable concordat of modern times was that between Pius VII. and Bonaparte in 1801, by which the Christian religion, which had been formally abolished by the revolutionary leaders, was reëstablished in France. Late instances of concordats are those made with Austria in 1855, Würtemberg in 1857, and Portugal in 1859.

CONCORDIA, an E. central parish of Louisiana, bounded E. by the Mississippi river, W. by the Tensas and Washita, and S. by Red river; area, 790 sq. m.; pop. in 1870, 9,977, of whom 9,257 were colored. Its surface is low, and inundations are consequently of frequent occurrence. There are many lakes and sloughs which occupy a considerable portion of the parish. The greater part of the land available for agriculture is laid out in cotton plantations. The chief productions in 1870 were 62,950 bushels of Indian corn, 4,350 of sweet potatoes, and 26,712 bales of cotton. There were 1,035 horses, 2,280 mules, 1,079 milch cows, 2,490 other cattle, and 4,017 swine. Capital, Vidalia.

CONCORDIA, a divinity of peace, in whose honor several temples were erected in Rome. The most ancient and celebrated of these temples was that built by Camillus, shortly before his death, on the declivity of the capitol, to commemorate the reconciliation of the patri-



Concordia. (Roman Medal, Zell's Pantheon.)

cians and plebeians, after the enactment of the Licinian rogations. Concordia was generally represented as a matron holding in her right hand a patera or an olive branch, and in her left hand a cornucopia. Her symbols were two hands clasped together, and two serpents entwined about a wand.

CONCORDIÆ FORMULA, the seventh and last symbolical book of the Lutheran church, in which the doctrinal development of that church in respect to the Lord's supper and the person of Christ was completed. The elector Augustus of Saxony, a partisan of Lutheran orthodoxy, made the sixth attempt to reconcile the stricter Lutherans, the milder Philippists, and the crypto-Calvinists to a common confession, when in 1576 he summoned the Lutheran theologians to meet for counsel in a convent at Torgau. The result of their deliberations, known as the "Torgau book," was submitted to the various German Lutheran churches, most of which, however, returned replies and criticisms instead of an unconditional assent. The elector therefore convened on March 11, 1577, in the cloister of Bergen, near Magdeburg, the three eminent theologians, Andreæ, Chemnitz, and Selnecker, to revise the Torgau book. In their first session they prepared the *Epitome* and the *Solida Declaratio*, which were elaborated anew in April, and received their final form in a third session in May, to which Musculus, Cornerus, and Chytræus were also admitted. These two statements of faith, of which the latter is the fuller, constitute the "Form of Concord." It was at once accepted by 3 electors (2 of whom soon seceded), 20 dukes and margraves, 24 counts, and 35 free cities, and was rejected by Hesse, Nassau, Pomerania, Holstein, Anhalt, and many important free cities. It was originally drawn up in German, and was translated into Latin successively by Osiander, Selnecker, and the convention of Quedlinburg in 1583; the last of which only was approved by the elector, and received as authentic. A complete history of the "Form of Concord" was written by J. N. Anton (Leipsic, 1779).

CONCRETE (Lat. *concrescere*, to grow together), a name given by architects and engineers to a mixture of common lime, hydraulic lime, or hydraulic cement, with sand and gravel or broken stones. A mixture of sand and hydraulic lime is also called concrete. It is used in the construction of the foundations and walls of buildings, of fortifications and of piers in harbors or in the sea, of aqueducts, sewers, and other structures much exposed to the action of the elements, or subjected to great pressure, being well adapted to these purposes in consequence of the hardness and insolubility it attains in solidifying. Formerly the name concrete was only applied when common lime was used, but that kind of concrete is now rarely made (except under extraordinary circumstances and by a newly applied process which will be noticed at the end of this article) when hydraulic lime or cement can be conveniently obtained. In the preparation of concrete with common lime, the London architects formerly employed one part of rich lime to six parts of unscreened Thames ballast, which usually consists of six parts of coarse pebbles to one of sand. The rule is that the slaked

lime should a little more than fill the voids in the pebbles and sand. Béton, or concrete made with hydraulic lime or cement, was employed in ancient times in some of the most renowned works of history. The factitious stones used by the Babylonians, Egyptians, and Phœnicians, as well as by the Greeks and Romans, were all a species of béton, or what is now called concrete. The Romans used it in large quantities in the construction of harbors and piers in the Mediterranean, and for aqueducts and roads, many portions of which exist at the present day. Their matrix was made of pozzuolana or trass, mixed with fat lime. The best modern concrete is made by using Portland cement, but a good article is also made with Teil lime and other hydraulic limes. An important quality that should be possessed by a lime or cement is that of setting slowly, to secure its more perfect crystallization and a firmer binding of the gravelly material. It is also desirable as allowing any portions of the material which may not have been perfectly slaked to expand in the process without rupturing the partially hardened structure; and this shows the importance of having the matrix well slaked and thoroughly incorporated before hardening begins.—Our advanced knowledge of the preparation of concrete is much owing to the experiments of M. François Coignet of Paris, whose manufacture of *béton aggloméré* has a world-wide celebrity. In this process, the matrix or paste is first prepared by mixing about three parts of hydraulic lime or cement with one part of water, and thoroughly triturating it in a mill until it is brought to a peculiar state of sticky consistency, which is best known by experience. Clean, sharp sand is then added in the proportion of about two parts to one of lime or cement, or one and a half to one of the paste. This is then well ground in a powerful mill and incorporated with an equal bulk, or a little more, of broken stone or coarse gravel. This may be formed into blocks of any required size, or the whole structure to be erected may be formed as a monolith. In either case, mechanical compaction is an important part of the process, and is effected by ramming the mixture with iron rammers weighing from 10 to 20 lbs. Blocks are made in moulds whose parts are separable. Layer after layer is thrown in and well condensed by ramming, and that this may be effected is one of the reasons why the amount of water should be carefully proportioned. The moulds are taken off in sections, and therefore may be of almost any shape, so that figures and traceries of any desired form may be copied. The blocks are then left exposed to the air and weather for several weeks or months, sometimes receiving occasional sprinklings of water. In time they become as impervious to water as many natural stones, and capable of resisting the influences of frost in the open air, or the action of sea water. When monolithic walls are made, a form is used open at the top and bottom, in which the concrete is rammed till it is filled, when it is raised as successive layers are added. In this way many fine structures have been erected, particularly in France. Of the Vanne aqueduct for supplying water to Paris, 37 m. have been executed in béton aggloméré. In the forest of Fontainebleau there are about 3 m. of arches, some of which are 50 ft. high. The whole structure, including arches and pipe, is one mass of solid masonry, without joints. A Gothic church at Vezinet, near Paris, having a spire 130 ft. high, is also a monolith of concrete, and exhibits, it is said, every evidence of durability. The lighthouse at Port Said, the northern terminus of the Suez canal, is also built of béton of Teil lime and Port Said sand, and is a monolith 180 ft. high. The jetties which form the harbor at Port Said are built of huge blocks of concrete formed of the same material. In their construction about 120,000 tons of Teil hydraulic lime were used. There were 25,000 blocks, each weighing 25 tons. The proportions were: lime in powder, 548 lbs.; desert sand, one cubic yard, mixed with sea water and poured into moulds, and hardened by exposure to the air for two or three months. M. Pascal, the chief engineer in the construction of docks at Marseilles, made a mortar in the proportion of Teil lime three parts, sand five parts, which was formed into a concrete by adding to one volume of mortar two volumes of broken stone.—One of the most extensive applications of hydraulic concrete in modern times was made by the French in their works at the harbor of Algiers, commencing in 1831. The mole which shelters the harbor is so exposed to winds that breaches were constantly being made in it by the force of the sea, and to such an extent that in former times the Moors were compelled to keep employed a large number of workmen to repair it, at an annual expense of more than $60,000. When the French commenced the reconstruction of the mole in 1833, after the failure of partial repairs, the first operation was to raise an outer embankment of large stones, under whose cover the foundation might be partially restored. It was intended to form this embankment of *pierre perdue*, and to employ natural stones of 100 to 140 cubic feet, and 212,000 cubic feet were thus used at a great expense; but during the next winter the embankment was completely destroyed by the waves, one block of 141 cubic feet having been carried completely across the mouth of the harbor. It thus became necessary to rebuild the entire embankment of blocks so large that no action of the sea could move them. Under the circumstances it was found that the required size would be about 353 cubic feet. The expense of quarrying and transporting such enormous blocks of stone led to the employment of artificial stone, or béton. Two kinds of blocks were manufactured; the first

in the water in the place they were intended to occupy, and the second on shore, to be afterward thrown into the sea. The first were made by immersing béton in caissons which were constructed of timber and plank, and lined on the inside with tarred cloth, the four sides being connected by hinged angle irons so as to be readily unshipped. The second kind of blocks were prepared on shore in moulds of timber and plank, resting upon an inclined plane, ending at the point where the block was to be sunk. After the béton had properly set, the sides were removed and the block launched into the sea. In making the mortar for the first description of blocks, one part of rich lime was slaked and made into a paste and then mixed with two parts of Italian pozzuolana, while for the blocks made on shore pozzuolana was mixed with an equal quantity of sand. The lime employed was from a hard, granular limestone, weighing about 156 lbs. per cubic foot. Slaked and reduced to the consistence of a thick pulp, it was found to absorb once and a half its weight of water and to increase in bulk 75 per cent. One volume of this with two volumes of pozzuolana made two volumes of mortar. To form the concrete, one part of mortar was incorporated with two parts of broken stone of about 1½ cubic feet. The entire work was performed in five years at a cost of less than $420,000, notwithstanding that the mole at the time of the occupation of Algiers by the French army in 1830 was in a state of complete dilapidation, in spite of the extensive repairs which had been annually made by the Moors for two centuries. The success met with in this work established two important facts: 1, that blocks of béton can be made sufficiently strong to resist the action of the heaviest waves, and form indestructible masses; 2, that these blocks are immovable by the waves when constructed above a certain size, determined by experiment to be about 353 cubic feet. One great advantage in the use of blocks of concrete over those of stone is in the diminished cost of handling and transportation, because the concrete blocks can be made at the place where they are used. The béton used by Vicat for the bridge of Souillac, upon the Dordogne, was composed of 26 parts of hydraulic lime in paste, 39 of granitic sand, and 66 of gravel. It was found to diminish in volume in the proportion of 1·31 to 1.—The immense masses of concrete which form the foundations of the East River bridge between New York and Brooklyn are composed of one part of Rosendale cement, two of sand, and four of coarse beach gravel from an inch to 2½ inches in diameter. The cement and sand were first mixed with water in a mill, and afterward incorporated with the gravel by means of shovels used by hand, the latter operation being performed for the most in the caissons, which were 172 ft. in length by 102 ft. in width. As this concrete lies below the bed of the river, and is therefore confined, there is little doubt that it will endure for centuries. The concrete blocks which form the foundation of the piers that are now (June, 1873) under construction at the Battery in New York harbor, are composed of one part of Portland cement, two of sand, and five of broken trap rock from the Palisades on the Hudson. The matrix of cement and sand was first formed by hand, and afterward incorporated with the broken stone by the same process. It was then shovelled into forms and compressed by ramming. After the béton had set, the forms were removed, and the blocks were exposed to the weather for two months. The concrete with which the natural stone masonry above the water floor is filled in is mixed in the same way, and rammed down in the spaces left by the walls and arches. Concrete is used as a foundation for roads and for cement walks in parks. A good article for this purpose may be made by using equal parts of Rosendale and Portland cements with sand and broken stone.—The artificial stone of Mr. Frederick Ransome, patented in 1856, made by the patent concrete stone company at East Greenwich, near London, England, is one of the remarkable productions of the day, not only furnishing an excellent building stone, but also a material for making a superior quality of grindstones. This concrete is composed of sand held together by silicate of lime, and is formed by an indirect process in which silicate of soda is decomposed by chloride of calcium. The silicate of soda is made by digesting flints with a solution of caustic soda of about 1·2 sp. gr. in boilers, under a pressure of 70 or 80 lbs. to the square inch. The solution of silicate of soda which results should have a specific gravity of about 1·7. Clean sharp sand, which has been dried in a current of hot air, is then mingled with a little finely ground chalk or marble, and the silicate of soda is added in the proportion of a gallon to the bushel of mixture, and the whole is thoroughly triturated in a mill. It becomes pasty during the operation, and susceptible of being moulded into any desired form. The mould blocks, formed by ramming, are then nearly saturated with a solution of chloride of calcium of about 1·4 sp. gr. Double decomposition immediately takes place, whereby silicate of lime and chloride of sodium, or common salt, are produced; and in a few minutes the blocks become hard enough to be handled. They are then immersed in vats containing the solution of chloride of calcium at a temperature of about 212° F., in order that a thorough decomposition of the silicate of soda and formation of silicate of lime may be effected. The latter substance, being insoluble and firmly enveloping the grains of sand, forms a firm and it is believed durable block of stone. The chloride of sodium, being soluble, is then discharged by displacement with water. It might be supposed that the stone would be left in a very porous condition, but experiment has proved that this is not the

case. Dr. Charles T. Jackson of Boston, after exhausting the air from the stone by means of a vacuum, found that it would absorb only about 16 per cent. of moisture. Under ordinary circumstances it may be considered as practically impervious to water, and is found to be quite as firm as most sandstones. Prof. Ansted of King's college, London, found that it would resist a crushing force of 4,200 lbs. to the square inch, and that its tensile strength was equal to 360 lbs. to the square inch; while natural Portland limestone, Bath stone, and Caen stones possessed respectively only 201, 145, and 140 lbs. tensile strength to the square inch. It is said that the best material that has yet been found for grindstones is that made by this process. The grains of sharp sand are held so firmly by the matrix of silicate of lime that they are capable of being made to cut away iron or steel with great rapidity. Experiments made by the Messrs. Donkin of Bermondsey showed that, compared with the best Newcastle stone, the Ransome stone had a capacity of cutting away steel in the proportion of 50 to 1. The artificial stone possesses the advantage, for large grindstones, of having more uniformity of structure than can be found in large blocks of natural stone, and it can be more readily formed into grindstones of various sizes. —The American building block company produce an artificial stone with silicious sand and lime, by subjecting the mixture to great pressure. There are two processes. The first, that of Foster, is as follows: Rich lime is slaked with a small quantity of water, and mixed with moist sand in sufficient quantity to fill the voids. The mortar is then put in moulds and subjected to great pressure, which increases the tendency to formation of silicate of lime. The pressure should be so great that the grains of sand are forced into almost actual contact, so that when the chemical action is completed nothing but silica, and silicate of lime holding it together, will remain in the block; the surplus of lime compounds being forced to the outside, where, by slowly hardening in the presence of air, they form a coating which does not detract from the value of the stone. Vanderburgh's process employs quick instead of slaked lime, which being mixed with moist sand is slaked by steam under pressure. A more complete union between the lime and sand is thus effected, principally in consequence of the greater degree of heat employed; and it is also found that the stone hardens more rapidly in Vanderburgh's than in Foster's process. The Union stone company of Boston, Mass., produce an artificial stone in imitation of several natural stones, the fabrication of which is founded upon the discovery of M. Sorel, a French chemist, that the double oxide and chloride of magnesium forms an excellent hydraulic cement. The materials used are magnesite (native carbonate of magnesia, which is found in various parts of the United States and Canada), chloride of magnesium, and sand, or powdered marble or other stone. The magnesite, reduced to caustic magnesia by burning, is then mixed with sand or powdered stone in the desired proportions. A solution of chloride of magnesium is added, and the mixture is triturated in a mill, when it is turned into moulds and firmly rammed. Hardening commences immediately, so that the block may be removed as soon as the ramming is done. —In consequence of the great advance in the knowledge of limes and cements that has taken place within the last few years, and the increased attention now being paid to the subject by chemists, engineers, and architects, it is probable that various kinds of artificial stone may in the future be used as materials of construction, in many cases, with considerable advantage.—Full information in regard to the manufacture of concrete may be found in the "Practical Treatise on Coignet Béton and other Artificial Stone," by Brevet Major Gen. Q. A. Gillmore, U. S. A. (New York, 1871); "Report on the Hydraulic Lime of Teil," by Leonard F. Beckwith, C. E. (New York, 1873); and Henry Reid's "Treatise on Concrete" (London, 1869).

CONCUBINAGE (Lat. *concubare*, to cohabit), a term applied in ancient times to a quasi-conjugal relation. Among the Hebrews the concubine was liable to be discarded, and to see her offspring excluded from the inheritance, though in most cases provisions were made for her and her children. The barrenness of a marriage often led to concubinage. Sometimes, with the wife's consent, her housemaid became the husband's concubine, to bring children into the family, but without his ceasing to stand in a marital relation to the wife. Subsequently the laws attempted to check excesses. The faithlessness of a concubine was not punished as severely as that of a wife; yet the line of demarcation between the two was so narrow that the paramour of the concubine was considered as her husband and as the son-in-law of her father. The first act of a usurper consisted generally in appropriating the concubines of his predecessor. Among the Persians concubinage likewise prevailed. Darius was followed to the battle field by numerous concubines, arrayed in regal splendor. Among the ancient Egyptians priests were allowed only one wife; and though polygamy was not prohibited among the rest of the people, monogamy seems to have been the general practice. Among the Greeks the concubine was usually a native-born female, who occupied a position between a wife, a servant, and a harlot. Outrages on her person were resented as severely as if she had been a wife; but she had to perform menial services, and after the death of her quasi-husband she was often treated like a slave. The laws of Athens sanctioned the relation of concubinage, which however was more trifled with among the Greeks than among the Hebrews; and the concubine was often made over to others, especially to guests of the house or to sons.—In Rome

the regular paramour of a married man was originally called *pellex* (harlot). The laws of Numa Pompilius excluded her from legal wedlock, and she was only admitted to the temples after having cut off her hair and sacrificed a lamb. Afterward the designation of concubine superseded that of pellex, and the illicit character of the relation was removed, so far as concerned the permanent cohabitation of a Roman spinster with a bachelor or widower, who was not a blood or collateral relation. No written contract was required by the law, but the social status of the wife was denied to the concubine; and the children, though regarded as of more honorable origin than those of unknown or disgraceful parentage, were yet looked upon as quasi-fatherless. The concubine seems to have been so far considered as a wife as to be liable to punishment for adultery. Concubines usually belonged to the lower classes; and at one time free-born Roman girls were precluded from becoming concubines unless they had sunk to the lowest depth of degradation, or had been employed on the stage or in other pursuits which were then considered disreputable. Subsequently it became requisite for a concubine to be a free-born Roman, and some authorities doubt whether common prostitutes were eligible for the position at any period of Roman history. Cæsar allowed to each Roman as many concubines as he desired. Vespasian, Antoninus Pius, and other widowers who had children by their deceased wives, preferred concubinage to new marriages. Constantine made legal marriage with a concubine indispensable for legitimizing the children; but this regulation had little effect, and he eventually allowed a concubine in addition to a wife. The relation continued to prevail to some extent under Justinian, with the legal designation of *licita consuetudo;* and though suppressed by the emperor Leo I., it was retained for a considerable period.—The church of Rome forbade temporary concubinage; but a lifelong relation of the kind, though not expressly sanctioned, was long tolerated. The council of Toledo, A. D. 400, punished it with excommunication for married men, but bachelors who kept concubines were not excluded from the communion. St. Isidore, archbishop of Seville (died in 636), expressed the opinion that no Christian ought to have more than one wife or one concubine. The term priestess often occurs in mediæval writings to designate the concubine of a priest. Leo X. (1513–'21) and other popes opposed concubinage, and the council of Trent declared it to be criminal. The Protestant churches do not seem to have ever sanctioned the relation in any form.—Among the Germans the relation with a *Nebenweib* or *Halbweib* (half-wife) was prohibited by imperial regulations in 1530, and made liable to penalties in 1577, which however were seldom inflicted, and the case was habitually disposed of by enforcing a separation. For a long time the children of concubines were looked upon as bastards, and were not entitled to inherit the property of the deceased father, which was confiscated by the state. In more recent times this rigor has been greatly relaxed, and the claims on the father granted to the children by the ancient Roman laws are generally conceded to them in Germany, though the practice varies in different states.—In France, as in other countries, the term concubinage was often applied to illicit relations which do not strictly belong to that category; and the children resulting from such alliances, though not regarded as legitimate, were not deprived of rights. There, as in many other parts of the world, whenever they rose to eminence they gloried in the appellation of bastards, and were frequently legitimated by the king. Until the revolution marriages were celebrated only in churches, and parties whose union was not consecrated at the altar were legally regarded as living in concubinage, and the children as bastards. The revocation of the edict of Nantes especially doomed Protestant children to these disabilities.—In regard to China, S. Wells Williams states that it is not infrequent for a man to secure a maid servant in the family, with the consent of his wife, by purchasing her for a concubine; especially if his occupation frequently calls him away from home, in which case he takes her as his travelling companion, and leaves his wife in charge of the household. The sons of a concubine being considered as legally belonging to the wife, parents betroth their daughters early, so as to prevent them from becoming concubines. Among the masses of the people it is rare to find more than one woman to one man; but in about two fifths of the wealthier families there are one or more concubines. The degradation of the wife, the elevation of the concubine, and the taking of a second wife are regarded as illegal and void; and the status of the purchased concubine is as carefully defined by the law as that of the wedded wife. The widow is occasionally sold as a concubine by her father-in-law; but this being regarded as degrading, and depriving her of the custody of her children, widows generally strive to escape from this fate. A widower is not restrained by law from marrying any of his concubines. In Japan concubinage is sanctioned by law, and is not regarded as particularly improper.—As regards Mohammedan and other countries where polygamy prevails, see POLYGAMY.

CONDAMINE, Charles Marie de la, a French geographer, born in Paris, Jan. 28, 1701, died there, Feb. 4, 1774. He was educated at the university of his native city, and in 1719 entered the army, and accompanied his uncle the chevelier de Cources to the siege of Rosas, where he showed that contempt of danger and spirit of enterprise which in after life was exhibited in another field. He soon abandoned the military profession, and joined an expedition which was proceeding to the Mediterranean to explore the coasts of Asia and Africa.

During his absence he visited the Troad, Cyprus, Jerusalem, and Constantinople. In 1735 the academy of sciences sent him with Bouguer and others to Peru, to measure an arc of the meridian, for the purpose of more accurately determining the dimensions and figure of the earth. He returned to France in 1743, and prepared accounts of the voyage, travels, and labors of the commission. His *Relation abrégée d'un voyage fait dans l'intérieur de l'Amérique Méridionale* appeared in 1745, and *La figure de la terre déterminée par les observations de MM. de la Condamine et Bouguer* in 1749. While in South America he made observations on the manufacture of articles of caoutchouc by the natives, and published in 1751 an account of an elastic resin, giving a description of several trees yielding caoutchouc, and to him is ascribed the introduction of the article into Europe. In 1748 he was made a fellow of the royal society of London, and in 1760 a member of the academy of sciences in Paris. He labored to promote in France the practice of inoculation for smallpox which was then followed in England. He left a number of treatises on geography, natural history, and physics, and in his day had some reputation as a writer of verses. The discovery by which he is best known is that the deflection of a plumb line by a mountain is large enough to be measured.

CONDÉ. I. Condé-sur-l'Escaut, a town of France, in the department of Le Nord, near the Belgian frontier, 7 m. N. E. of Valenciennes; pop. in 1866, 4,642. It is noted for its arsenal and fortifications, for its trade in coal, cattle, and corn, and its manufactories of cordage, leather, chiccory, and starch. A canal 15 m. long connects it with Mons in Belgium. It was taken by the Austrians in 1793. The princes of Condé took their title from this place. **II. Condé-sur-Noireau,** a town in the department of Calvados, at the confluence of the Noireau and Drance rivers, 24 m. S. S. W. of Caen; pop. in 1866, 6,643. It was one of the first towns to sympathize with the reformation, became a rallying point of the Protestants at the beginning of the 16th century, and a provincial synod was held there in 1674. Dumont d'Urville, the traveller, was a native of this town.

CONDÉ, the name of a younger branch of the Bourbon family, the successive heads of which have played important parts in French history. **I. Louis I. de Bourbon,** prince de, born at Vendôme, May 7, 1530, died March 13, 1569. The youngest brother of Antoine de Bourbon, king of Navarre, and uncle of Henry IV., he early distinguished himself by his gallantry during the wars against Charles V. and Philip II. of Spain. He adopted the faith of Calvin, like the rest of his family, and became the chief of the Protestant party. The rival of the Guise family, he took a secret part in the conspiracy of Amboise in 1560, and was arrested at Orleans a few weeks later, sentenced to death, and saved only by the accession of Charles IX. to the throne, which put an end to the Guise influence. After the slaughter of Vassy in 1562, he took up arms, was defeated, and taken prisoner at Dreux by François de Guise. Being liberated by the edict of Amboise in 1563, he again revolted, and in 1567 nearly succeeded in overtaking the king and the court at Meaux, but was shortly after defeated at St. Denis, near Paris. He was amnestied by the peace of Longjumeau in 1568; but being aware of the designs of the court against him, he renewed the civil war, fought at Jarnac with undaunted courage, although he had been severely wounded, and was taken prisoner and shot by Montesquiou, an officer of the duke of Anjou. **II. Henri I. de Bourbon,** prince de, son of the preceding, born at Ferté-sous-Jouarre in December, 1552, died at St. Jean d'Angély, March 5, 1588. After the death of his father he joined the Protestant army, then led by Coligni. He escaped the massacre of St. Bartholomew by promising to abjure Protestantism; but eluding his keepers, he fled to Germany, whence he wrote to Henry III. demanding the free exercise of his religion. Collecting a military force, he repaired to the camp of the duke of Alençon, now the leader of the Protestants. In 1585 he was excommunicated by Pope Sixtus V. together with the king of Navarre. He died of poison administered by his servants. His wife, Catherine de la Trémouille, was suspected of having instigated the crime, and proceedings were instituted against her; but Henry IV. threw the papers into the fire, and the parliament of Paris pronounced her innocent. Suspicion has, however, attached to her memory. It has been said that she committed the crime in order to conceal the consequences of an intrigue with a page, according to some, but according to others with Henry IV. himself. **III. Henri II. de Bourbon,** prince de, son of the preceding, born at St. Jean d'Angély, Sept. 1, 1588, died in Paris, in December, 1646. He was born six months after the death of his father, was taken to court at the age of seven years, and brought up a Catholic. In 1609 Henry IV. caused him to be married to Marguerite de Montmorency, with whom he was himself enamored. Condé, perceiving the attentions which the king paid to his wife, fled with her to Brussels; and Henry complained to the Spanish court on account of the favorable reception given to a prince of the blood royal who had left the kingdom without permission. Condé continued his flight to Italy, and did not return to Paris until after the death of Henry. He then joined the malcontents, and, having put forth a fierce manifesto against the government, left the court. He and his adherents were declared guilty of high treason. The treaty of Loudun (1616) between the queen and Condé restored him to his estates; but he continued his intrigues. He was arrested, thrown into the Bastile, and afterward imprisoned at Vincennes,

where he remained three years. He then asked to be set at liberty, and appointed to a command against the Protestants. His request was granted, and in 1636 he entered Franche-Comté, and after capturing several places laid siege to Dôle. The town made a vigorous resistance, and Condé was forced to raise the siege. He was equally unsuccessful at the siege of Fuenterrabia in 1638, but took Salces in 1639, and Elne in 1642. After the death of Louis XIII. he was admitted to the council of regency, in which he rendered signal services. "But his greatest glory," says Voltaire, "was to be the father of the great Condé." **IV. Louis II. de Bourbon,** the great Condé, son of the preceding, born in the castle of Vincennes, Sept. 8, 1621, died at Chantilly, Dec. 11, 1686. After receiving a thorough education, he entered the military service and signalized himself by unusual intrepidity and fierceness of temper. When only 22 years old, and known as the duke d'Enghien, he was placed in command of the French army in Flanders. Contrary to the advice of the old generals who served under his orders, he gave battle to the Spaniards at Rocroy, May 19, 1643, and through skilful manœuvres, and the impetuosity of his attacks, overpowered them; thus inaugurating by a brilliant victory the reign of Louis XIV. In 1644, being sent to Germany, he fought for three days in succession against the Bavarian Gen. Mercy, near Freiburg, and forced him to retreat. In 1645 he again met his rival Gen. Mercy at Nördlingen, and engaged in a terrific conflict, during which Mercy was killed, while Condé himself was wounded, but finally achieved another triumph. In 1646 he returned to Flanders, and took Dunkirk; but the following year, in Spain, he was foiled in the siege of Lérida, and his past exploits did not shield him against ridicule and satire. But these were soon silenced by another great success, Aug. 20, 1648, at Lens in Flanders. There he completed the destruction of that formidable Spanish infantry which had received the first deadly blow at Rocroy; and a still more important object was gained, this victory bringing about the end of the thirty years' war, and the peace of Westphalia, signed by France Oct. 24, 1648. At the beginning of the war of the Fronde in the next year, he for a while sided with the court against the parliament and the lords, and after a three months' siege succeeded in reinstating the young king in Paris; but dissatisfied with the reward of this service, he acted with an overbearing superciliousness which was imitated by his followers, and caused them to be styled *petits maîtres*. Queen Anne of Austria and Mazarin, being resolved to get rid of so despotic an auxiliary, became reconciled for a while with the chiefs of the Fronde, and had the prince arrested, in company with his brother and brother-in-law, Conti and Longueville, Jan. 18, 1650. Liberated by Mazarin, who was obliged to leave the kingdom, he repaired to Bordeaux, which city had already revolted in his behalf. He was worsted by several royalist chiefs, and especially by Turenne. The first important engagement between the two great rivals took place April 7, 1652, near Bléneau on the Loire, where, notwithstanding the numerical inferiority of his troops, Turenne conquered. "You have for the second time placed the crown of France on the head of my son," said Anne of Austria, in congratulating him upon his success. Three months later, July 2, another battle was fought under the walls of Paris in the faubourg St. Antoine, and Condé would have been entirely defeated had not the duchess de Montpensier, then in Paris, caused the gates of the metropolis to be opened, and the artillery of the Bastile to play upon the royal army. But Paris, the parliament, and nearly all the Frondeurs were tired of the protracted struggle; and it was in vain that Condé urged them to prolong their resistance. They made their peace with the queen, and the prince had now no other alternative than to go over to the Spaniards in the Netherlands. The French hero was now seen in the ranks of those against whom he had been so fiercely arrayed, fighting against his own countrymen. But fortune seemed to have deserted him; he shared in the defeats inflicted by Turenne upon his allies at Arras in 1654, and near Dunkirk in 1658. On the conclusion of the treaty of the Pyrenees in 1659, he was pardoned and allowed to return to France, where he lived at his magnificent country seat of Chantilly. Eight years afterward he was recalled to active service, and early in 1668 conquered Franche-Comté within less than three weeks. This reinstated him with the king, but not sufficiently to make the latter support him as a candidate for the crown of Poland after the abdication of John Casimir. In 1672, on the outbreak of the war against the United Provinces, Condé was placed at the head of one of the armies which invaded the Netherlands, and was wounded in the arm at the crossing of the Rhine. He afterward opposed William of Orange, whom he fought at Senef, Aug. 11, 1674, with doubtful success. The next year he was called to Alsace to command another French army which had been entirely disorganized by the death of Turenne; he restored order, and drove Montecuculi beyond the Rhine. This was his last triumph, the infirmities consequent upon his long campaigns forcing him to retire. He repaired to Chantilly, where he was surrounded by a crowd of followers; here also he frequently received the most illustrious poets of his time, Racine, Molière, La Fontaine, and Boileau. In his latter years he was especially fond of the society of Bossuet, who was his spiritual adviser, and whose funeral oration describes in a most eloquent manner the military life and Christian death of the illustrious warrior.—See *Essai sur la vie du grand Condé*, by Louis Joseph de Bourbon, prince de Condé (London,

1806); "Life of the Great Condé," by Lord Mahon (London, 1840); *Histoire du grand Condé*, by Lemercier (Tours, 1844); and *Histoire du grand Condé*, by Voivreuil (Tours, 1847). **V. Henri Jules de Bourbon,** prince de, son of the preceding, born in 1643, died April 1, 1709. In 1650, while his father was in prison, a royal order was received that the duchess and her son, then known as the duke d'Enghien, should be conveyed to Berry. A servant, personating her mistress, detained the royal messenger while the duke and his mother took flight to Bordeaux. After many adventures the duke in 1654 rejoined his father in the Netherlands, and commenced a brilliant career in arms. In 1663 he married Anne of Bavaria, princess palatine of the Rhine. He served in the army of Flanders in 1667, in Franche-Comté in 1668, and in Holland in 1672. In 1674 he saved the life of his father at Senef, and in 1675 captured Limburg. In his later years he manifested strange humors; his avarice and the excessive care which he took of his health rendered him the laughing-stock of the court. **VI. Louis III. de Bourbon,** duke de Bourbon-Condé, son of the preceding, born in 1668, died in Paris, March 4, 1710. He was grand master of the royal household, governor of Burgundy, and manifested military capacity equal to that of his grandfather, the great Condé; but he never held the chief command of an army. He took part in the siege of Philippsburg under the orders of the dauphin, in that of Mons under the king, and in that of Namur in 1692. He distinguished himself at the battles of Steenkerke, 1692, and Neerwinden, 1693, and in the campaign of Flanders in 1694. He died suddenly. **VII. Louis Henri de Bourbon,** duke de Bourbon and Enghien, son of the preceding. See Bourbon, Louis Henri. **VIII. Louis Joseph de Bourbon,** prince de Condé, son of the preceding, born at Chantilly, Aug. 9, 1736, died in Paris, May 13, 1818. He was three years old when his father, the duke de Bourbon, late minister of Louis XV., left him an orphan. He distinguished himself during the seven years' war, especially at the battle of Johannisberg, Aug. 30, 1762. His life at the commencement of the revolution was marked by many acts of munificence and liberality; but after the taking of the Bastile he was among those who at once emigrated, and, with the count d'Artois, organized on the banks of the Rhine the French army of emigrants, afterward styled *armée de Condé*. This body, in concert with the Austrian army with which it was incorporated, took an active part in the campaign of 1793 on the banks of the Rhine. In 1795 the prince entered into secret negotiations with Pichegru, who was in command of the republican French army, but without success. The army of Condé, increased to 10,000 men in 1796, received their pay from England, although continuing to operate with the Austrian troops. After the peace of Campo Formio in 1797, Condé repaired to Russia, and took part with the Russians in the campaign of 1799 in Switzerland; afterward with the Austrians in that of 1800; and finally retired to England in June, 1801. On the restoration he returned to France with Louis XVIII., who appointed him colonel general of the infantry and grand master of the royal household. He resided at Paris in the Palais Bourbon, but more frequently at Chantilly. He wrote *Essai sur la vie du grand Condé* (London, 1806), reprinted in the *Mémoires de la maison de Condé*, published by Sévelinges in 1820. **IX. Louis Henri Joseph de Bourbon,** duke de Bourbon, and the last prince de Condé, son of the preceding. See Bourbon, Louis Henri Joseph. **X. Louise Adélaïde de Bourbon,** sister of the preceding, distinguished for her piety, born at Chantilly, Oct. 5, 1757, died in Paris, March 10, 1824. Having emigrated with her family during the revolution, she became an inmate of the Carmelite nunnery of Turin, and took the veil, Sept. 27, 1797, at a convent in Switzerland. On the arrival of the republican army in that country she fled to Russia, and eventually found a refuge at Warsaw. When she heard of the death of her nephew the duke d'Enghien, she repaired to England to comfort his father; and from 1815 to the time of her death she resided in Paris, where the king presented her with the *maison du Temple*. She established here the religious order of the *adoration perpétuelle*, of which she had been a member during her stay at Warsaw, under the name of Marie Louise de la Miséricorde. The letters written by her in 1786–'7, to M. de la Gervaisais (an officer for whom in her early days she had conceived a Platonic love), were published by M. Ballanche in 1834.—See *Histoire des princes de Condé*, by the duke d'Aumale (2 vols., Paris, 1869), translated into English by Robert Brown-Borthwick (2 vols., London, 1872).

CONDE, José Antonio, a Spanish orientalist and historian, born at Paraleja, in the province of Cuenca, about 1765, died in Madrid in 1820 or 1821. He was educated at Alcalá, applied himself to the study of oriental languages, and obtained employment at the royal library of Madrid. Joseph Bonaparte appointed him chief librarian. When the French were driven from Spain, he repaired to Paris, but subsequently returned to Madrid. He wrote a *Descripcion de España* (1799), and *Historia de la dominacion de los Arabes en España* (3 vols. fol., with plates, Madrid, 1820–'21; 8vo, Paris, 1840; translated into French by Marlès, into German by Kuttschmann, 1824–'5, and into English by Mrs. Jonathan Forster, 1854).

CONDER, Josiah, an English publisher and author, born in London, Sept. 17, 1789, died Dec. 27, 1855. In 1814 he purchased the "Eclectic Review," which he edited till 1837. In 1824 the "Modern Traveller" was commenced, extending to 33 volumes, nearly all of which were compiled by Mr. Conder. In 1832 he became editor of the "Patriot," a news-

paper in the dissenting interest, which he conducted until his death. Among his works are "Protestant Nonconformity" (2 vols.), "The Star in the East," a poem, and "An Analytical and Comparative View of all Religions."

CONDILLAC, Étienne Bonnot de, a French philosopher, born at Grenoble, Sept. 30, 1715, died Aug. 3, 1780. In early youth his constitution was so feeble that he could not be kept at school; at 12 years of age he was not able to read. After having improved in health, he devoted himself to science, and became the tutor of the heir apparent of Parma, a nephew of Louis XV. Having completed the prince's education, he returned to Paris, and subsequently retired to an estate near Beaugency, where he spent the rest of his life. He was a quiet, unpretending scholar. In his philosophy he started from the ideas of Gassendi and Hobbes, and from the psychological researches of Locke, but enlarged and modified them to such a degree that his claims to originality have not been seriously contested. His theories were highly esteemed for their clearness and simplicity, and were widely propagated by the encyclopædists. In his *Essai sur l'origine des connaissances humaines* (Amsterdam, 1746), he maintained the following propositions: 1. All our ideas originate in sensations; there are no innate ideas. 2. Not only our ideas but all faculties of the human soul proceed from transformed sensations; the intellectual faculties (attention, comparison, judgment, reflection, imagination, and the reasoning power) from sensations so far as they represent external objects; the faculties of volition (need, desire, passion, and resolution) from sensations so far as they affect the subject. 3. The intellectual action consists merely in the connection and combination of ideas. 4. Left to itself, unaided by the senses, the human mind is void and powerless. Whatever progress it has made is owing to the use of signs and articulated sounds. Thinking is nothing without language. Languages are analytical methods. To them we owe most of our ideas, which have no reality except by the words or signs representing them. 5. In reasoning, proof is afforded by identity. The demonstration of such identity is facilitated by the close analogy of words. Hence science is not much more than language, and a correct science depends upon a correct language, adapted as closely as possible to the different modifications and gradations of perception. 6. The only method leading to the knowledge of truth is the analytic one, the close and logical observation of all parts of an object, so that the mind may comprehend them simultaneously, and understand their common principle. Synthesis, beginning with definitions and abstract generalities, is useless, since it generates chimeras and errors. Condillac, although reducing all the faculties of the soul to mere transformations of sensation, does not belong to the materialist school proper. Unlike La Mettrie and his followers, he does not consider sensation as a mere physical process, and assumes the immaterial nature of the soul. In his *Traité des systèmes* (1749) he endeavored to show that all metaphysical systems are based upon arbitrary assumptions, shallow quibbles, or empty abstractions. The "innate ideas" of Descartes, the "ideas of God" of Malebranche, the "monads" of Leibnitz, the "infinite substance" of Spinoza, are all mercilessly dissected by Condillac, and exposed as chimeras. His *Traité des sensations* (1754) is an ingenious demonstration of the psychological process by which sensations are developed into ideas and self-consciousness. In this book Condillac exhibits a human form as yet entirely inanimate, and then adding successively the senses, he goes on to show what kind of sensations are produced by the one and the other; how by the repetition or combination of these sensations ideas are begot; again, how these ideas are interwoven, and new combinations formed, every succeeding one more remote from and apparently independent of the original sensitive impressions. The idea of considering the human mind first as a *tabula rasa*, and then observing the action of the senses upon it, was not entirely new; it had been used before by Bonnet, Diderot, and Buffon. The original manner, therefore, in which this idea had been used by Condillac did not save him from the reproach of having mechanically imitated Buffon. To show the untruth of this, he wrote his *Traité des animaux* (1755), in which he refuted many of Buffon's doctrines by the very principles laid down in the *Traité des sensations*. While tutor of the prince of Parma, Condillac composed the *Cours d'études*, in three volumes, intended as a kind of cyclopædia of philosophical and historical science, but chiefly remarkable for the ingenious investigation of the signs and words representing sensations and ideas. Another work, *Le commerce et le gouvernement considérés relativement l'un à l'autre* (1776), being an application of his analytic method to political and economical doctrines, was not successful. Having been requested by the board of education of Poland to assist in the organization of public education in that country, Condillac wrote his *Logique* (published in 1781), as a manual for schools. An incomplete work, *La langue des calculs*, in which he had proposed to demonstrate that all sciences might be rendered as positive and exact as mathematics, was published in 1798 by Laromiguière. Several editions of the complete works of Condillac have been published in Paris (23 vols., 1798; 32 vols., 1803; 16 vols., 1821).

CONDOM, a town of France, in the department of Gers, on the river Bayse, which is here crossed by two bridges, 24 m. N. N. W. of Auch; pop. in 1866, 8,140. It has manufactories of cotton, mixed fabrics, and earthenware, and carries on a brisk trade with Bordeaux in agricultural produce. There is a handsome Gothic church of the 16th century, and a communal college. It was formerly the

seat of a bishopric, which was for some time filled by Bossuet. Dupleix and Salvandy were born there.

CONDOR (*sarcoramphus gryphus*), a large bird of prey, belonging to the order *raptores,* family *vulturidæ.* In the genus *sarcoramphus,* which includes two species, both peculiar to the American continent, the bill is moderate, covered for about one third of its length with a soft cere, and arched to its strong and sharp tip; the nostrils are large and exposed in the middle of the cere, and in the male furnished with a caruncle; the wings are long and pointed, with the third and fourth quills equal and the longest; the tail is moderate and even at the end; the tarsi are plumed below the knee, and covered with small reticulated scales; the toes are moderate and united by a slight membrane; the hind toe is the shortest and is weak; the claws are strong and slightly curved; the head, neck, and front of the breast are bare of feathers, and covered with a hard, dry, and wrinkled skin, with a few short, stiff, and dark-



Condor (Sarcoramphus gryphus).

colored hairs. On the summit of the head, in the male only, is a fleshy or cartilaginous crest, extending over the posterior part of the beak, and sloped anteriorly so as not to cover the nostrils; this crest, unlike that of the gallinaceous birds, is hard, with very few vessels, and incapable of inflation. The head is flat; the beak whitish at the tip, and brownish at the base. The rough skin of the head and neck is formed into folds, somewhat as in the turkey, which may be swelled out at pleasure; these wrinkles arise from the habit of contracting its neck within the collar. The naked neck is separated from the feathered body by a collar of fine and white silken down; this collar is found in the adults of both sexes. The general color of the plumage is brownish black; the primaries are black; the secondaries are nearly half white, so that, in the males especially, the wing is adorned with a white spot, which has led some naturalists into the erroneous belief that the back is white, from the appearance of this color when the bird is hovering below the observer. The feathers are not so thick on the under surface of the body, but those of the thighs are long. The only noise it makes is a hiss like that of a goose. The most extravagant ideas prevailed concerning the size of the condor until the visit of Humboldt to South America. The average length of this bird, from the point of the beak to the end of the tail, is not more than 3½ ft., and the spread of the wings from 9 to 10 ft.; some individuals, from favorable circumstances, may attain an extent of wings of 12 or 13 ft. A full-grown male from the most celebrated locality on the Andes, now in Vassar college, has a stretch of 9 ft. Humboldt never found one to measure over 9 ft., and the largest specimen seen by Darwin was 8½ ft. from tip to tip. An old male in the zoölogical gardens of London measures 11 ft. The exaggerated accounts of its size have doubtless originated from the difficulty of accurate observation in the solitary and almost inaccessible retreats which the condor prefers; it is most frequently seen either perched upon a lofty mountain peak, or soaring at an immense height. With this idea of its gigantic size, it is natural that travellers should believe and report tales of its strength and ferocity in attacking and carrying off man and large animals. Its beak and claws are very strong, but are employed in tearing dead rather than living animals. Humboldt could not ascertain that these birds had ever carried off a child, and believed that the reports of their killing young persons are as fabulous as those concerning the great noise made in their flight. Still, with their great strength, there is no doubt that condors might destroy children and even man; they have been seen to attack young bulls, and tear out their tongue and eyes. Nevertheless, the natives of the Andes uniformly assert that they are not dangerous to man, and even leave their young children asleep in the open air without fear of their being carried off. The true condor belongs exclusively to the chain of the Andes, from the straits of Magellan to a few degrees north of the equator. Condors generally live in pairs, in the most elevated and solitary localities; from these they descend into the valleys and plains in search of food, generally the carcasses of large animals. Their ordinary habitat is between the altitudes of 10,000 and 16,000 ft. The largest seem to make their home around the volcano of Cayambe, which stands exactly on the equator. In the rainy season they frequently descend to the coast, where they may be seen roosting on trees. They are most commonly seen around vertical cliffs, where their nests are, and where cattle are most likely to fall. Great numbers frequent Antisana, where there is an extensive cattle estate. When gorged with food, they retire to their ledges to digest it. As summer approaches, they seek the most inaccessible crags to rear their young; the female makes no nest,

but deposits two white eggs, about four inches long, upon the bare rock, placing a few sticks around them. Incubation occupies about seven weeks, ending in April or May. The young are scarcely covered with a dirty-white down, and they are not able to fly for nearly two years. They are as downy as goslings until they nearly equal in size a full-grown bird. The white frill at the base of the neck, and the white feathers in the wings, do not appear until the second plumage, or until after the first general moulting, during which time they lie in the caves and are fed by their elders for at least six months. Previous to this the frill is of a deep gray color and the wing feathers brown. The claws of the condor are nearly straight, and it prefers alighting on the ground to perching in trees. They often hunt in pairs, and two will not hesitate to attack the largest animals, pursuing them, and tearing them with beak and talons until they expire. There is no doubt that the condor detects its prey almost entirely by the sense of vision; when stimulated by hunger, it flies to a great height for the purpose of taking in at a glance a vast extent of country. Thus, though a carrion bird, it breathes the purest air, spending much of its time at a height of three miles above the sea. Humboldt saw one fly over Chimborazo, and Orton says he has seen them sailing 1,000 ft. above the crater of Pichincha. It is often seen singly soaring at a great height in vast circles; its flight is slow and majestic; its head is constantly in motion, as if in search of food below; its mouth is kept open and its tail spread. From its large and exposed nostrils, as compared with the smaller and covered ones of the birds preying exclusively on living animals, it is possible that the condor is to some extent guided to its favorite food by the sense of smell; but, from the careful experiments of Audubon with other species of vulture, it is most likely, as he suggests, that the large openings of the nostrils are for the purpose of permitting the bird to clear out this avenue of respiration while its beak is plunged in the filthy matters which it devours. From the inactivity of the condor when gorged with food has arisen the favorite native method of taking it alive. A horse or cow being killed, the condors soon make their appearance and attack the carcass, beginning with the eyes and tongue, their favorite morsels; in order to arrive the quickest at the intestines of the animal, they direct their principal efforts to the anus; when satiated and unable to mount, the Indians pursue and capture them with ease. To rise from the ground it must run for some distance; then it flaps its wings three or four times, and ascends at a low angle till it reaches a considerable elevation, when it seems to make a few leisurely strokes, as if to ease its wings, after which it literally sails upon the air. In walking, the wings trail on the ground, and the head takes a crouching position; it has a very awkward, almost painful gait. From its inability to rise without running, a narrow pen is sufficient to imprison it. In captivity it will eat almost anything but pork and cooked meat; a single condor of moderate size has been known to eat in one week a calf, a sheep, and a dog. In confinement they are mischievous and ferocious; they are very hard to kill, from the difficulty of penetrating their thick plumage, and they appear to have more tenacity of life than any other birds of prey.—The second species of the genus, the king vulture (*S. papa*), called condor in Mexico and Central America, and intimately connected with the mythology of the Aztecs, is about as large as a goose, and frequents more especially the plains of the Pacific coasts of America from 32° S. to 30° N.; but it is most numerous in the torrid zone. The skin of the head and neck is of a bright red color, bare of feathers, wrinkled, with a few hairs on the occiput, and a frill of plumes below the naked portion of the neck large enough to conceal a great part of the head when the bird draws itself into its favorite contracted, half-inclined position. Between the nostrils rises a soft crest, indented like the comb of a cock, and terminating in wart-like protuberances. The general color of the plumage is white, whence the Spaniards of Paraguay called it the white crow; the wing coverts, wings, tail, a part of the back, the bill, and the tarsi are black; in some specimens the naked skin of the head and neck is variegated with tints of orange, purple, and red. The immature birds have much more black in their plumage. The king vulture resembles the condor in its habits; it is a shy bird, unless pressed by hunger and in the vicinity of carrion; it is said to build its nest in a hollow tree, and to deposit two eggs. It received the name of king vulture, because from its superior size and strength it readily put to flight the carrion crows and turkey buzzards when congregated about a carcass upon which it desired to feed.

CONDORCET, Marie Jean Antoine Nicolas Caritat, marquis de, a French savant, born at Ribemont, near St. Quentin, Sept. 17, 1743, died at Bourg-la-Reine, March 28, 1794. He received his education at the collége de Navarre, and being introduced at the age of 19 to the court of Louis XV., his strict morality and earnest love of science kept him pure from the pernicious influences of that dangerous region. His essay *Sur le calcul intégral* and some similar writings were rewarded by his election, at the age of 26, to the academy of sciences, of which in 1777 he was elected secretary. His ingenuity in handling the most difficult mathematical problems was equalled by his versatility. In 1777 a premium was awarded to him by the Berlin academy of science for his theory of comets. An intimate friend of Turgot, Condorcet made himself familiar with the systems of political economy; at the same time he became an active contributor to the

Encyclopédie of Diderot and D'Alembert. He was a zealous advocate of the cause of the American colonies, and of the gradual emancipation of negro slaves, to be preceded, however, by their education. The French revolution found him, although belonging to the higher ranks of nobility and a friend of the duke de Rochefoucauld, among the defenders of the popular cause. To his fame as a mathematician he now added that of a political writer. The boldness of thought which had distinguished his scientific researches characterized his political pamphlets and speeches. While in his *Feuille villageoise* he explained the fundamental principles of politics and public economy in plain and lucid language, adapted to the understanding of the masses, he rivalled the best orators of his time in his speeches as a member of the legislative assembly. The speech in which, after the attempted escape of the king, he represented monarchy as an anti-social institution, was admired as a model of eloquence and conclusive argument. He was elected secretary, and in 1792 president of the legislative assembly. The address of the French people to the nations of Europe on the abolition of monarchy was written by Condorcet. As a member of the national convention, he sided with the Girondists or moderate republicans. When the king was impeached by the convention, Condorcet voted for the severest penalty short of capital punishment, the total abolition of which he had always advocated. To him was intrusted the work of preparing a new constitution, but the downfall of the Girondists (May 31, 1793) prevented its completion. Nothing daunted by the reign of terror, he energetically denounced the extreme measures adopted by the committee of public safety. Indicted as an accomplice of Brissot (Oct. 3), he retired from public notice to save his life, and was in consequence declared an outlaw. For months he was secreted by Mme. Vernet. During that time he wrote his *Esquisse d'un tableau historique des progrès de l'esprit humain*, and the *Épître d'un Polonais exilé en Sibérie à sa femme*. When by a stray newspaper he learned that all who sheltered outlaws were to forfeit their own lives, he left his asylum in spite of the entreaties of Mme. Vernet, fled from Paris in disguise, and wandered about for some time until starvation compelled him to ask for food in an inn at Clamart (March 27, 1794). Here he met with a member of the local revolutionary tribunal, who had him arrested and committed on suspicion without even knowing his name. The next morning he was found in his prison a corpse. The general opinion is that he voluntarily put an end to his life by a dose of poison which he had carried with him for some time. His complete works have been edited by Garat and Cabanis (22 vols., Paris, 1804). After the establishment of the republic in 1870, the *lycée impérial* received the name of the *lycée Condorcet*.—His wife, Marie Louise Sophie de, a sister of Marshal Grouchy and Mme. Cabanis, took a lively interest in his philosophical researches, and wrote herself some works which are not without merit. She also translated into French Adam Smith's "Theory of Moral Sentiments" (Paris, 1798). She was born in 1765, and died Sept. 6, 1822.

CONDOTTIERI (Ital., conductors), the common designation of adventurers who, principally in Italy, during the 14th and 15th centuries, kept bands of soldiers which they hired out to the party that paid best. The burghers of the Italian municipalities, having by their control of the commerce with Asia become wealthy and prosperous, were slow to take up arms and risk their lives and fortunes for every petty quarrel with neighboring states. Hence they hired others to fight for them, not for a certain term of years, but by the job. The condottieri, then, were a kind of contractors, who, when a war was impending, made their bids accordingly. Having underbid one another in price, they not unfrequently increased their pay by plunder and booty. When the job was finished, they were loath to discharge their bands, but in order to keep them together they were compelled to fight and plunder on their own account. There was a kind of good fellowship between the condottieri, which they observed even when fighting under different colors. When one party was hired to put down another, the result generally was only a bloodless fight, the peaceable citizens being the only sufferers. Among themselves they had rules of warfare of their own. For instance, when they made a prisoner of their own class, they merely relieved him of the valuables he carried on his person and set him free without requiring ransom, while every outsider was made to pay heavily for his liberation. In the 15th century their wars were frequently mere shams. Thus, at a great battle near Zagonera in 1423, there were only three men killed; and in 1467 a battle was fought near Molinella between the condottieri of the pope and those of Naples, in which there was not even a single man hurt. Not infrequently they changed their allegiance on the very field of battle when they were offered better pay by the enemy; nor did they hesitate to double or treble the price agreed upon after every real or sham victory.

CONE, in geometry, a solid figure described by a straight line moving in such a way that it always passes through a given curve enclosing a portion of a plane and through a fixed point not in that plane. The fixed point is called the vertex of the cone, and the portion of the plane enclosed by the given curve is called the base of the cone. When the base is a circle, and the line drawn from the vertex to the centre of the circle is perpendicular to the plane of the circle, the figure is called a right cone. If the line drawn from the vertex to the centre of the base is not perpendicular to the plane of the base, the figure is called an oblique cone. So if a right-angled

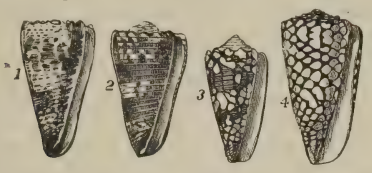
triangle be revolved about one of the sides forming the right angle, the other side will describe a circle and the hypothenuse will describe a right cone. In popular usage the cone is considered as limited to that portion of the figure between the vertex and the base; but in mathematics the line describing the cone is supposed to extend indefinitely beyond the base, and the mathematical cone is consequently a figure of boundless extent. Every straight line drawn from the vertex through the curve enclosing the base is called a side of the cone. Every such line of course represents one of the positions of the line by which the cone is supposed to have been described. The distance from the vertex to the base measured on any one of these lines is called the slant height. The perpendicular distance from the vertex to the plane of the base is called the altitude of the cone. The study of the right cone is sufficient for most practical and scientific purposes. (See Conic Sections.) The area of the surface of a right cone is equal to one half the circumference of the base multiplied by the slant height. The volume or solidity of a right cone is equal to one third the area of the base multiplied by the altitude.—The name cone is given to the fruit of the pines and larches, from their resemblance to this figure.

CONE, Spencer Houghton, D. D., an American clergyman, born in Princeton, N. J., April 30, 1785, died in New York, Aug. 28, 1855. At the age of 12 he entered Princeton college, but two years later the infirm health of his father made him the only support of a large family, and he became Latin teacher in the Princeton academy. He afterward taught school at Burlington, N. J., and subsequently in Philadelphia, where he enfeebled his health by the combined labors of teacher, law student, and copyist. One of his friends, an Episcopal bishop, advised him to take orders in the Episcopal church, from which, however, he was withheld by the fact that he was a Baptist, and of a family which had been Baptist during many generations. The next advice of the bishop was that he should avail himself of his remarkable voice, and other superior physical qualifications, by going upon the stage. This he prepared to do, and in 1805 he appeared in the old Chestnut street theatre, Philadelphia, and at once took considerable rank. For seven years he followed this profession with great success, chiefly at Philadelphia, Baltimore, and Alexandria. In 1812 the lady to whom he was engaged refused to marry him unless he abandoned the stage; which he did, and became editor of the "Baltimore American" newspaper. He soon after joined a regiment and served against the British in the engagements connected with their attacks on Baltimore and Washington. At the instance of George M. Dallas, whose father was secretary of the treasury, he obtained an appointment at Washington; and as he now contemplated the Christian ministry, he began to preach in some of the neighboring churches. He immediately excited general interest, attracted thronging audiences, and was chosen chaplain to the congress of 1815–'16. He was settled in Alexandria until 1823, when he accepted a call to the Oliver street Baptist church in New York city, of which society he held the pastorate till 1841, when he exchanged it for that of the first Baptist church in the same city, which he retained till his death. He was a leading member of the Baptist general convention of the United States, and became its president in 1832; was foremost in directing the measures of the societies of home and foreign missions; took part in the discussions which resulted in the secession from the American Bible society of the American and foreign Bible Society, of which he was chosen president; and in 1850 was one of the authors of a tract calling for a new translation of the Bible, more definitely in accordance with Baptist views, which occasioned an exciting controversy within the Baptist body. The result of the discussion, however, was that the proposal was negatived, and then Dr. Cone prompted the formation of the American Bible union, of which he was made president. A memoir of his life was written by his sons, and published in New York in 1856.

CONECUH, a S. county of Alabama, drained by Escambia river, Burnt Corn creek, Murder creek, and Sepulgah river; pop. in 1870, 9,574, of whom 4,901 were colored. The former area was 1,430 sq. m., but a portion has recently been taken to form Escambia county. It has a hilly surface, with a sandy, sterile soil. The forests furnish large quantities of pine timber, which are conveyed down the Conecuh in small rafts. Near Brooklyn, in the E. part, is a large cave. The Mobile and Montgomery railroad passes through the county. The chief productions in 1870 were 92,177 bushels of Indian corn, 12,550 of sweet potatoes, and 1,539 bales of cotton. There were 425 horses, 1,769 milch cows, 2,298 sheep, and 4,433 swine. Capital, Sparta.

CONEJOS, the S. W. county of Colorado, bounded N. E. and E. by the Rio Grande, which also intersects the N. part, S. by New Mexico, and W. by Utah; area, over 11,000 sq. m.; pop. in 1870, 2,504. It is watered by the Conejos and other tributaries of the Rio Grande, and also by tributaries of the San Juan. The surface is broken by mountains, the Sierra Madre and Sierra La Plata ranges traversing the county. There is a large area of arable land. The W. part is occupied by the Ute Indian reservation. The precious metals are found in the mountainous parts, but are little worked. Gypsum also occurs. The inhabitants are chiefly Mexicans and half-breeds. The chief productions in 1870 were 9,222 bushels of wheat, 852 of oats, 2,001 of potatoes, and 71,076 lbs. of wool. There were 548 horses, 1,791 milch cows, 2,178 other cattle, and 35,538 sheep. Capital, Guadalupe.

CONE SHELLS, univalve shells of the genus *conus*, comprising many species and varieties. The shell is very thick, and appears as if rolled up in conical form. The outer lip



1. Conus imperialis. 2. C. zonatus. 3. C. nocturnus. 4. C. marmoreus.

is simple and sharp-edged, the inner lip is smooth. The spire is frequently very flat. The mollusk has a distinct head, with gills, a long proboscis, and a pair of tentacula bearing eyes. A horny operculum closes the opening of the shell. The cones are many of them very beautiful both in form and colors, and some specimens bring a high price. They are mostly found in tropical seas, but some are met with in the Mediterranean. They live in fissures and holes in rocks, and especially in the warm pools and on the sandy bottoms inside coral reefs, at depths varying from a few feet to 30 fathoms. They move slowly, and are all predatory; some will bite when handled. Some fossil species occur in the tertiary formation.

CONESTOGAS, or **Gandastogués,** a tribe of Indians formerly on the Susquehanna river, commonly called by the French Andastes, by the people of Virginia and Maryland Susquehannas, and by the Dutch and Swedes Minquas. They were of the same family as the Hurons and Iroquois, and their name Gandastogués meant nation of roof poles. Before 1600 they nearly exterminated the Mohawks in a ten years' war, and were still at war with them in 1608, when Capt. Smith met a party of Susquehannas on Chesapeake bay. They held in subjection all the neighboring Algonquin tribes, and were at war with those of Maryland. Acquiring firearms and cannon from the Swedes, they were so troublesome to Maryland that Gov. Calvert proclaimed them public enemies in 1642. They were friends and allies of the Hurons of Upper Canada, and offered to aid them with 1,300 warriors. In 1652 they ceded to Maryland lands on the Patuxent, Choptank, and Elk. In 1656 they were involved in war with the Iroquois, and though much reduced by smallpox, they fought desperately, gaining many victories over superior forces, but were completely overthrown in 1675. A part submitted to the Iroquois; others, retreating into Maryland, were attacked by Maryland and Virginia troops, who put five chiefs to death. The desperate Indians then ravaged the frontiers till they were cut off. In 1701 Canoodagtoh, their king, made a treaty with William Penn. They appear in a treaty in 1742, but were then fast disappearing. In 1763, during a period of excitement against the Indians, the remnant of the Conestogas took refuge in the jail at Lancaster, Pa., where they were cruelly butchered by an organization called the Paxton boys. The most distinguished of their chiefs was Logan, the famous orator. A vocabulary of their language was preserved in the works of the Swedish missionary Campanius, *Nye Sverige* and *Lutheri Catechismus* (Stockholm, 1696). A brief English account of them is in Alsop's "Maryland" (London, 1666; New York, 1869).

CONEWANGO CREEK, a stream which rises in the N. W. corner of Cattaraugus co., N. Y., flows in a general S. direction, receiving the waters of the outlet of Chautauqua lake, and joins the Alleghany river at Warren, Warren co., Pa. By means of this creek and its outlets there is boat navigation from the gulf of Mexico to within 10 m. of Lake Erie.

CONEY ISLAND, a barren strip of white sand at the S. W. extremity of Long Island, 9 m. S. of New York city, 1½ m. long and ½ m. broad. It is but slightly separated from the mainland. During the summer season it is much resorted to by pleasure-seekers, and on holidays especially is crowded by multitudes who flock from the neighboring cities to enjoy the sea air and bathing. It is connected by rail with Brooklyn, and by steamboats with New York.

CONFARREATION, the most solemn of the three ceremonies of marriage used among the ancient Romans. The other forms of marriage were *coemptio* and *usus*. These last are the only ones mentioned by Cicero, which shows that confarreation had fallen into disuse before his time. The ceremony was performed by the *pontifex maximus* or *flamen dialis*. A formula was pronounced in the presence of at least ten witnesses, and the man and woman partook of a cake of salted bread; part of which only they ate, the rest being thrown upon the sacrifice, which was a sheep. The cake was called *farreum* (from *far*, grain), whence *confarreatio*. By this form the woman was said to come into the possession of her husband by the sacred laws, and became a partner of all his substance and sacred rites, those of the penates as well as the lares. If the husband died intestate and without children, the wife inherited the whole property; if there were children, she received with them an equal share. The offspring of this form of marriage were called *patrimi* or *matrimi;* and from them were chosen priests and priestesses, especially the *flamen dialis* and vestal virgins. Tiberius wished for a priest of this pure lineage, but the ceremony had fallen into disuse, so that three patricians thus qualified could not be found. Confarreation could only be dissolved by a form of divorce equally solemn, called *disfarreatio*. Bride cake is a relic of confarreation; until within 200 years it was made of wheat or barley, without fruit.

CONFEDERATE STATES OF AMERICA, a confederacy formed by eleven southern and slaveholding states which seceded from the United States in 1860–'61, and organized a government terminating in 1865. In the presidential

election of 1860 all these states voted by heavy majorities for the democratic candidates; in none of them were any votes given for the republican candidates, except in Virginia, where they received fewer than 2,000 in a total poll of 167,000 votes. The first public act which took place having for its avowed object the formation of a southern confederacy was the call for a state convention in South Carolina. This was issued by the legislature on Nov. 7, 1860, the day after the presidential election, when it was known that a majority of the electors chosen on Nov. 6 were in favor of Lincoln and Hamlin, the republican candidates for president and vice president. The call summoned the convention to meet at Columbia on Dec. 17. Other measures were then adopted calculated to put the state in a position to meet the consequences of her action. The most important of these was a bill providing for an army of 10,000 men. A month later, on Dec. 10, Francis W. Pickens was chosen governor of the state by the legislature, and was at once inaugurated. In his inaugural address he thus explained the cause and the reasons for the secession of South Carolina: "For 73 years this state has been connected by a federal compact with co-states, under a bond of union for great national objects common to all. In recent years there has been a powerful party, organized upon principles of ambition and fanaticism, whose undisguised purpose is to divert the federal government from external and turn its power upon the internal interests and domestic institutions of these states. They have thus combined a party exclusively in the northern states, whose avowed objects not only endanger the peace, but the very existence of nearly one half of the states of this confederacy. And in the recent election for president and vice president of these states, they have carried the election upon principles that make it no longer safe for us to rely upon the powers of the federal government or the guarantees of the federal compact. This is the great overt act of the people in the northern states at the ballot box, in the exercise of their sovereign power at the polls, from which there is no higher appeal recognized under our system of government in its ordinary and habitual operations. They thus propose to inaugurate a chief magistrate, at the head of the army and navy, with vast powers, not to preside over the common interests and destinies of all the states alike, but upon issues of malignant hostility and uncompromising war to be waged upon the rights, the interests, and the peace of half the states of this Union. In the southern states there are two entirely distinct and separate races, and one has been held in subjection to the other by peaceful inheritance from worthy and patriotic ancestors; and all who know the races well know that it is the only form of government that can preserve both, and administer the blessings of civilization with order and in harmony. Anything tending to change and weaken the government and the subordination between the races, not only endangers the peace, but the very existence of our society itself. We have for years warned the northern people of the dangers they were producing by their wanton and lawless course. We have often appealed to our sister states of the south to act with us in concert upon some firm and moderate system by which we might be able to save the federal constitution, and yet feel safe under the general compact of union; but we could obtain no fair warning from the north, nor could we see any concerted plan proposed by any of our co-states of the south calculated to make us feel safe and secure. Under all these circumstances we now have no alternative left but to interpose our sovereign power as an independent state to protect the rights and ancient privileges of the people of South Carolina. This state was one of the original parties to the federal compact of union. We agreed to it, as a state, under peculiar circumstances, when we were surrounded with great external pressure, for purposes of national protection, and to advance the interests and general welfare of all the states equally and alike. And when it ceases to do this, it is no longer a perpetual union. It would be an absurdity to suppose it was a perpetual union for our ruin." The state convention assembled at Columbia on Dec. 17. Its president, David F. Jamison, said in his opening address: "If anything has been decided by the late election, it is that South Carolina must be taken out of this confederation in as speedy a manner as possible." He had no faith in any guarantees that might be offered by the north. They could offer none more solemn or more binding than the present constitution, and yet that sacred instrument had not protected them from aggression on the question of slavery. "Has it saved us from abolition petitions, intended to insult and annoy us on the very floors of congress? Has not that instrument been trodden under their very feet by every northern state, by placing on their books statutes nullifying the laws for the recovery of fugitive slaves?" Smallpox prevailing in Columbia, the convention after organizing adjourned to Charleston, where a committee was appointed to draft an ordinance of secession. The committee reported on Dec. 20 the following instrument:

"*An Ordinance to dissolve the Union between the State of South Carolina and other States united with her under the compact entitled 'The Constitution of the United States of America.'*

"We, the people of the state of South Carolina, in convention assembled, do declare and ordain, and it is hereby declared and ordained, that the ordinance adopted by us in convention on the twenty-third day of May, in the year of our Lord one thousand seven hundred and eighty-eight, whereby the constitution of the United States was ratified, and also all acts and parts of acts of the general assembly of the state ratifying amendments of the said constitution, are hereby repealed, and the union now subsisting between South Carolina and other states, under the name of 'The United States of America,' is hereby dissolved."

This ordinance was immediately passed by the unanimous vote of the convention, and was signed on the same day by its members in the presence of the governor and of both branches of the legislature. At the conclusion of the ceremonies the president of the convention formally proclaimed the state of South Carolina an independent commonwealth. On the following day a special committee appointed to draft a "declaration of the causes which justify the secession of South Carolina from the federal union" made a report in which those causes are thus stated:

"We assert that fifteen of the states have deliberately refused for years past to fulfil their constitutional obligations, and we refer to their own statutes for the proof. The constitution of the United States, in its fourth article, provides as follows: 'No person held to labor or service in one state, under the laws thereof, escaping into another, shall, in consequence of any law or regulation therein, be discharged from such service or labor, but shall be delivered up on claim of the party to whom such service or labor may be due.' This stipulation was so material to the compact that without it that compact would not have been made. The greater number of the contracting parties held slaves, and the state of Virginia had previously declared her estimate of its value by making it the condition of her cession of the territory which now composes the states north of the Ohio river. The same article of the constitution stipulates also for rendition by the several states of fugitives from justice from the other states. The general government, as the common agent, passed laws to carry into effect these stipulations of the states. For many years these laws were executed. But an increasing hostility on the part of the northern states to the institution of slavery has led to a disregard of their obligations, and the laws of the general government have ceased to effect the objects of the constitution. The states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, Illinois, Indiana, Ohio, Michigan, Wisconsin, and Iowa* have enacted laws which either nullify the acts of congress, or render useless any attempt to execute them. In many of these states the fugitive is discharged from the service or labor claimed, and in none of them has the state government complied with the stipulation made in the constitution. The state of New Jersey, at an early day, passed a law for the rendition of fugitive slaves in conformity with her constitutional undertaking, but the current of anti-slavery feeling has led her more recently to enact laws which render inoperative the remedies provided by her own law and by the laws of congress. In the state of New York even the right of transit for a slave has been denied by her tribunals; and the states of Ohio and Iowa have refused to surrender to justice fugitives charged with murder and with inciting servile insurrection in the state of Virginia. Thus the constitutional compact has been deliberately broken and disregarded by the non-slaveholding states, and the consequence follows that South Carolina is released from its obligation. The ends for which the constitution was framed are declared by itself to be 'to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defence, promote the common welfare, and secure the blessings of liberty to ourselves and our posterity.' These ends it endeavored to accomplish by a federal government, in which each state was recognized as an equal, and had separate control over its own institutions. The right of property in slaves was recognized by giving to free persons distinct political rights; by giving them the right to represent, and burdening them with direct taxes for, three fifths of their slaves; by authorizing the importation of slaves for twenty years; and by stipulating for the rendition of fugitives from labor. We affirm that these ends for which this government was instituted have been defeated, and the government itself has been made destructive of them by the action of the non-slaveholding states. Those states have assumed the right of deciding upon the propriety of our domestic institutions, and have denied the rights of property established in fifteen of the states and recognized by the constitution; they have denounced as sinful the institution of slavery; they have permitted the open establishment among them of societies whose avowed object is to disturb the peace and to eloin the property of the citizens of other states. They have encouraged and assisted thousands of our slaves to leave their homes; and those who remain have been incited by emissaries, books, and pictures to servile insurrection. For twenty-five years this agitation has been steadily increasing, until it has now secured to its aid the power of a common government. Observing the forms of the constitution, a sectional party has found within that article establishing the executive department the means of subverting the constitution itself. A geographical line has been drawn across the Union, and all the states north of that line have united in the election of a man to the high office of president of the United States whose opinions and purposes are hostile to slavery. He is to be intrusted with the administration of the common government, because he has declared that that 'government cannot endure permanently half slave, half free,' and that the public mind must rest in the belief that slavery is in the course of ultimate extinction. This sectional combination for the subversion of the constitution has been aided in some of the states by elevating to citizenship persons who, by the supreme law of the land, are incapable of becoming citizens; and votes have been used to inaugurate a new policy, hostile to the south, and destructive of its peace and safety."

* The enumeration of New York, Illinois, and Indiana among the states which had enacted personal liberty laws was an error. Those states had no such laws.

This address was adopted on Dec. 24 by a vote of 124 to 30, and on the same day the governor issued the following proclamation:

"*Whereas*, The good people of this state, in convention assembled, by an ordinance unanimously adopted and ratified on the twentieth day of December, in the year of our Lord one thousand eight hundred and sixty, repealed an ordinance of the people of this state adopted on the twenty-third day of May, in the year of our Lord one thousand seven hundred and eighty-eight, and have thereby dissolved the union between the state of South Carolina and other states under the name of the United States of America:

"I, therefore, as governor and commander-in-chief in and over the state of South Carolina, by virtue of authority in me vested, do hereby proclaim to the world that this state is, as she has a right to be, a separate, sovereign, free, and independent state, and as such has a right to levy war, conclude peace, negotiate treaties, leagues, or covenants, and to do all acts whatsoever that rightfully appertain to a free and independent state."

At this time, also, the state forces seized the United States custom house, post office, and arsenal in Charleston, and Forts Pinckney and Moultrie in the harbor of that city. Major Anderson, the United States commander, who had only about 80 men, withdrew his command from Fort Moultrie into Fort Sumter, which he considered more defensible. The convention on Dec. 25 appointed commissioners to visit the other slaveholding states and invite them to coöperate with South Carolina in the formation of a southern confederacy. Mississippi was the first to respond. Her convention passed the ordinance of secession on Jan. 9, by a vote of 84 to 15, which was subsequently made unanimous. Florida on the following day, Jan. 10, passed an ordinance of secession with a preamble declaring as a reason for the act, that "all hope of preserving the Union upon terms consistent with the safety and honor of the slaveholding states has been fully dissipated by the recent indications of the strength of the anti-slavery sentiment of the free states." The ordinance was passed by a vote of 62 to 7. Alabama was the next state to secede. Her chief city, Mobile, received the news of the secession of South Carolina with ringing of bells, firing of cannon, great gatherings in the streets, enthusiastic speeches, and every demonstration of joy. The governor, Andrew B. Moore, had already called a convention of delegates, elected Dec. 24, which assembled Jan. 7, 1861. All the counties of the state were represented. A strong Union sentiment was manifested by the members from

the northern part of the state. In spite of their opposition, however, the following ordinance of secession was carried by a vote of 61 to 39:

"*An Ordinance to dissolve the union between the state of Alabama and other states united under the compact styled 'the constitution of the United States of America.'*

"Whereas the election of Abraham Lincoln and Hannibal Hamlin to the offices of president and vice president of the United States of America, by a sectional party, avowedly hostile to the domestic institutions and to the peace and security of the people of the state of Alabama, preceded by many and dangerous infractions of the constitution of the United States by many of the states and people of the northern section, is a political wrong of so insulting and menacing a character as to justify the people of the state of Alabama in the adoption of prompt and decided measures for their future peace and security: Therefore,

"*Be it declared and ordained by the people of the state of Alabama in convention assembled*, That the state of Alabama now withdraws, and is hereby withdrawn, from the union known as 'the United States of America,' and henceforth ceases to be one of said United States, and is, and of right ought to be, a sovereign and independent state.

"Sec. 2. *Be it further declared and ordained by the people of the state of Alabama in convention assembled*, That all the powers over the territory of said state, and over the people thereof, heretofore delegated to the government of the United States of America, be, and they are hereby, withdrawn from said government, and are hereby resumed and vested in the people of the state of Alabama."

Georgia, the most populous and powerful of the cotton states, did not secede without considerable hesitation on the part of a large proportion of her people, nor without solemn warning and earnest remonstrance from her most distinguished citizen, Alexander H. Stephens, who on Nov. 11, 1860, addressed her legislature in Milledgeville, which was then the capital of the state, in opposition to the project of calling a secession state convention. His advice was not heeded. A convention was called, which was elected Jan. 4, 1861, and met at Milledgeville on the 16th. Mr. Stephens was a member, and on the second day of the session made a powerful and almost prophetic speech against secession, in which he said:

"This step, secession, once taken, can never be recalled, and all the baleful and withering consequences that must follow (as you will see) will rest on this convention for all coming time. When we and our posterity shall see our lovely south desolated by the demon of war, which this act of yours will inevitably provoke, when our green fields and waving harvests shall be trodden down by a murderous soldiery, and the fiery car of war sweeps over our land, our temples of justice laid in ashes, and every horror and desolation upon us, who but this convention will be held responsible for it, and who but him who shall have given his vote for this unwise and ill-timed measure shall be held to a strict account for this suicidal act by the present generation, and be cursed and execrated by posterity in all coming time for the wide and desolating ruin that will inevitably follow this act you now propose to perpetrate? Pause, I entreat you, and consider for a moment what reasons you can give that will satisfy yourselves in calmer moments—what reasons you can give to your fellow sufferers in the calamity that it will bring upon us. What reasons can you give to the nations of the earth to justify it? They will be calm and deliberate judges of this case, and to what cause or one overt act can you point on which to rest the plea of justification? What right has the north assailed? what interest of the south has been invaded? what justice has been denied? and what claim, founded in justice and right, has been unsatisfied? Can any of you name to-day one governmental act of wrong, deliberately and purposely done by the government at Washington, of which the south has a right to complain? I challenge an answer. On the other hand, let me show the facts (and believe me, gentlemen, I am not here the advocate of the north, but I am here the friend, the firm friend and lover of the south and her institutions, and for this reason I speak thus plainly and faithfully for yours, mine, and every other man's interest, the words of truth and soberness) of which I wish you to judge, and I will only state facts which are clear and undeniable, and which now stand in the authentic records of the history of our country. When we of the south demanded the slave trade, or the importation of Africans for the cultivation of our lands, did they not yield the right for twenty years? When we asked a three-fifths representation in congress for our section, was it not granted? When we demanded the return of any fugitive from justice, or the recovery of those persons owing labor or allegiance, was it not incorporated in the constitution, and again ratified and strengthened in the fugitive slave law of 1850? Do you reply that in many instances they have violated this compact, and have not been faithful to their engagements? As individuals and local communities they may have done so, but not by the sanction of government, for that has always been true to southern interests. Again, look at another fact. When we asked that more territory should be added, that we might spread the institution of slavery, did they not yield to our demands in giving us Louisiana, Florida, and Texas, out of which four states have been carved, and ample territory left for four more, to be added in due time, if you by this unwise and impolitic act do not destroy this hope, and perhaps by it lose all, and have your last slave wrenched from you by stern military rule, or by the vindictive decree of a universal emancipation, which may reasonably be expected to follow? But again, gentlemen, what have we to gain by this proposed change of our relation to the general government? We have always had the control of it, and can yet have if we remain in it, and are as united as we have been. We have had a majority of the presidents chosen from the south, as well as the control and management of most of those chosen from the north. We have had 60 years of southern presidents to their 24, thus controlling the executive department. So of the judges of the supreme court, we have had 18 from the south, and but 11 from the north. Although nearly four fifths of the judicial business has arisen in the free states, yet a majority of the court has always been from the south. This we have required, so as to guard against any interpretation of the constitution unfavorable to us. In like manner, we have been equally watchful over our interests in the legislative branch of the government. In choosing the presiding officer (*pro tem.*) of the senate we have had 24 and they 11; speakers of the house, we have had 23 and they 12. While the majority of the representatives, from their greater population, have always been from the north, yet we have generally secured the speaker, because he to a great extent shapes and controls the legislation of the country. Nor have we had less control in every other department of the general government. Attorney generals we have had 14, while the north have had but 5. Foreign ministers we have had 86, and they but 54. While three fourths of the business which demands diplomatic agents abroad is clearly from the free states, because of their greater commercial interests, we have, nevertheless, had the principal embassies, so as to secure the world markets for our cotton, tobacco, sugar, on the best possible terms. We have had a vast majority of the higher officers of both army and navy, while a larger proportion of the soldiers and sailors were drawn from the north. Equally so of clerks, auditors, and comptrollers filling the executive department; the records show for the last 50 years that of the 3,000 thus employed, we have had more than two thirds, while we have only one third of the white population of the republic. Again, look at another fact, and one, be assured, in which we have a great and vital interest; it is that of revenue, or means of supporting government. From official documents we learn that more than three fourths of the revenue collected has uniformly been raised from the north. Pause now, while you have the opportunity, to contemplate, carefully and candidly, these important things. Look at another necessary branch of government, and learn from stern statistical facts how matters stand in that department. I mean the mail and post-office privileges that we now enjoy under the general government, as it has been for years past. The expense for the transportation of the mail in the free states was, by the report of the postmaster general for 1860, a little over $13,000,000, while the income was $19,000,000. But in the slave states the transportation of the mail was $14,716,000, and the revenue from the mail only $8,000,265, leaving a deficit of $6,715,735 to be supplied by the north for our accommodation, and without which we must have been entirely cut off from this most essential branch of the government. Leaving out of view for the present the countless millions of dollars you must expend in a war with the north, with tens of thousands of your sons and brothers slain in battle and offered up as sacrifices on the altar of your ambition—for what? I ask again. Is it for the overthrow of the American government, established by our common ancestry, cemented and built up by their sweat and blood, and founded on the broad principles of right, justice, and humanity? I must declare to you here, as I have often done before, and it has also been declared by the greatest and wisest statesmen and patriots of this and other lands, that the American government is the best and freest of all governments, the most equal in its rights, the most just in its decisions, the most lenient in its measures, and the most inspiring in its principles, to elevate the race of men, that the sun of heaven ever shone upon. Now for you to attempt to over-

throw such a government as this, under which we have lived for more than three quarters of a century, in which we have gained our wealth, our standing as a nation, our domestic safety, while the elements of peril are around us, with peace and tranquillity, accompanied with unbounded prosperity and rights unassailed, is the height of madness, folly, and wickedness, to which I will neither lend my sanction nor my vote."

Notwithstanding this appeal, the convention on Jan. 19 passed an ordinance of secession by a vote of 208 to 89. A week later, on Jan. 26, Louisiana seceded by a vote of 113 to 17. Finally, on Feb. 1, Texas, in spite of the opposition of her governor, Sam Houston, and the lukewarmness of a large part of her population, was voted out of the Union by an irregularly called convention, whose final vote was 166 to 7.—In the documents put forth by the seceding states thus far no allusion is made to any cause of complaint against the northern states other than their interference with slavery. But it was not long before the secessionists took broader ground generally, and claimed to be acting in defence of state rights against the encroachments of the national government. Their position is thus stated by Mr. Stephens of Georgia in his "War between the States," published in 1867:

"Considerations connected with the legal status of the black race in the southern states, and the position of several of the northern states toward it, together with the known sentiments and principles of those just elected to the two highest offices of the federal government (Messrs. Lincoln and Hamlin) as to the powers of that government over this subject, and others which threatened, as was supposed, all their vital interests, prompted the southern states to withdraw from the Union, for the very reason that had induced them at first to enter into it; that is, for their own better protection and security. Those who had the control of the administration of the federal government denied this right to withdraw or secede. The war was inaugurated and waged by those at the head of the federal government against these states, or the people of these states, to prevent their withdrawal from the Union. On the part of these states, which had allied themselves in a common cause, it was maintained and carried on purely in defence of this great right, claimed by them, of state sovereignty and self-government, which they with their associates had achieved in their common struggle with Great Britain, under the declaration of 1776, and which in their judgment lay at the foundation of the whole structure of American free institutions."

—Thus in the space of three months after the presidential election seven states had renounced the Union and declared themselves sovereign and independent. Everywhere throughout these states the arsenals, custom houses, navy yards, and forts belonging to the United States were seized by the secessionists, with the exception of Fort Sumter, and Fort Pickens in Florida, which last was preserved by the energetic action of Lieut. Slemmer, its commander. The posts at the southern extremity of Florida also remained in the hands of the government. Those which fell into the hands of the secessionists were without garrisons, and were taken without bloodshed. The United States army at the beginning of the southern revolt was only 16,000 strong, and by orders from Mr. Floyd, the secretary of war, who was himself a party to the secession movement, had been dispersed in the remotest parts of the country. The largest force in one body was in Texas under the command of Gen. Twiggs, a Georgian by birth, who on Feb. 18 surrendered his whole command and all the posts and munitions of war to the Texans, for which on March 1 he was dismissed from the army by command of President Buchanan. Under Mr. Floyd's orders also an extensive transfer of arms from northern to southern arsenals had been made during 1860, 115,000 muskets being transferred by one order, and great quantities of cannon and ammunition by other orders. Congress assembled at Washington, Dec. 3, 1860, and President Buchanan's annual message was mainly devoted to the consideration of the secession movement. He recommended, as the most effectual mode of stopping the revolution, an amendment of the constitution embracing these three points: 1, an express recognition of the right of property in slaves in the states where it now exists or may hereafter exist; 2, the duty of protecting this right in all the common territories throughout their territorial existence, and until they shall be admitted as states into the Union with or without slavery as their constitutions may prescribe; 3, a like recognition of the right of the master to have his slave, who has escaped from one state to another, restored and delivered up to him, and of the validity of the fugitive slave law enacted for this purpose, together with a declaration that all state laws impairing or defeating this right are violations of the constitution and are consequently null and void. "Such an explanatory amendment would, it is believed, for ever terminate the existing dissensions, and restore peace and harmony among the states." This part of the message was referred in the senate to a committee of 13, who reported on Dec. 31 that they had not been able to agree upon any general plan of adjustment. Mr. Crittenden, a senator from Kentucky, introduced on Dec. 18 a plan of compromise, proposing to renew the Missouri line of 36° 30′; to prohibit slavery north and permit it south of that line; to admit new states with or without slavery as their constitutions might provide; to prohibit congress from abolishing slavery in the states, and in the District of Columbia so long as it exists in Virginia or Maryland; to permit free transmission of slaves by land or water in any state; to pay for fugitive slaves rescued after arrest; to ask the repeal of personal liberty laws in the states; these concessions to be submitted to the people as amendments to the constitution, and if adopted never to be changed. These were rejected, and the following resolutions, offered by Mr. Clark of New Hampshire, a republican senator, adopted: "That the provisions of the constitution are ample for the preservation of the Union, and the protection of all the material interests of the country; that it needs to be obeyed rather than amended; and that an extrication from the present dangers is to be looked for in strenuous efforts to preserve the peace, protect the public property, and enforce the laws, rather than in new guarantees for particular interests, compromises for particular

difficulties, or concessions to unreasonable demands. That all attempts to dissolve the present Union, or overthrow or abandon the present constitution, with the hope or expectation of constructing a new one, are dangerous, illusory, and destructive; that, in the opinion of the senate of the United States, no such reconstruction is practicable, and therefore to the maintenance of the existing union and constitution should be directed all the energies of all the departments of the government, and the efforts of all good citizens." These resolutions expressed substantially the position of the republicans in congress, who had become the majority in both houses by the resignation of the democratic senators and representatives from the seceded states. About the time that they were adopted, the legislature of Virginia passed resolutions recommending each of the states to appoint commissioners to a convention, the object of which should be "to adjust the present unhappy controversies." This proposition was approved by the president, and most of the loyal states promptly responded by appointing delegates. None appeared from the seceded states. The convention assembled at Washington, Feb. 4, 1861, and chose John Tyler of Virginia as chairman. After a session of three weeks the convention laid before congress a series of proposed amendments to the constitution, to the following effect: 1, prohibiting slavery north of lat. 36° 30′ in territories, but tolerating it in states, and forbidding all congressional or territorial legislation against slavery south of that line; 2, prohibiting any future acquisition of territory without the concurrence of a majority of senators both from slave and free states; 3, prohibiting congress from regulating, abolishing, or controlling slavery within any state, from interfering with or abolishing slavery in the District of Columbia or other places under exclusive federal jurisdiction, and from taxing slaves at a higher rate than land; 4, authorizing the states to enforce the rendition of fugitive slaves; 5, prohibiting the foreign slave trade. Another section provided for the payment from the United States treasury of the value of a fugitive slave whose rendition was prevented by mobs or by any violence or intimidation. The first, third, and fifth of these sections were to be permanent parts of the constitution, not to be abolished or amended without the consent of all the states. These propositions were rejected by congress, which had long had under consideration a variety of similar measures, all of which failed to secure a sufficient number of votes. The following amendment to the constitution was however recommended by the house by a two-thirds vote of 133 to 65: "No amendment shall be made to the constitution which will authorize or give to congress the power to abolish or interfere within any state with the domestic institutions thereof, including that of persons held to service or labor by the laws of said state." While these discussions were going on in congress, the cabinet of President Buchanan was disturbed and perplexed on the subject of reënforcing the forts in Charleston harbor, a measure opposed by Mr. Floyd, the secretary of war, and insisted upon by Gen. Cass, the secretary of state, who on Dec. 14 resigned his office in consequence of the president's refusal to order reënforcements. Four days before, Howell Cobb, the secretary of the treasury, had resigned and returned to his residence in Georgia, where he immediately took an active part in the secession movement. His place was filled by Philip F. Thomas of Maryland, while Mr. Black, the attorney general, was appointed temporary secretary of state. Shortly afterward, on the unexpected movement of Major Anderson from Fort Moultrie to Fort Sumter, and the president's refusal to comply with Mr. Floyd's demand for the entire withdrawal of the garrison from Charleston harbor, the latter resigned, and Joseph Holt, who had been appointed postmaster general on the death of Aaron V. Brown in 1859, was authorized to administer the affairs of the war department. Mr. Floyd's services to the cause of secession by supplying the southern states with arms from northern arsenals had been of the highest value, and he was soon made a brigadier general in the army of the seceded states. On Dec. 29 commissioners from South Carolina, who had recently arrived in Washington, endeavored to open negotiations with the president for the surrender to South Carolina of the United States forts and other national property within her borders. The president declined to receive them as commissioners, or to surrender or evacuate Fort Sumter, and permitted his cabinet to make an attempt to send reënforcements to Major Anderson by the steamer Star of the West, which left New York Jan. 5, 1861, and arrived off Charleston on the morning of the 9th; but she was fired at from batteries manned by the forces of the state, and compelled to retire without effecting her purpose. This led to the immediate resignation of Jacob Thompson, secretary of the interior, and his return to Mississippi, from the revolutionary government of which he had while still in office received and acted upon a commission to visit and promote the secession of North Carolina. A few days later Mr. Thomas, also disapproving of the attempt to reënforce Fort Sumter, withdrew from the treasury department, and was succeeded by John A. Dix of New York, who was in favor of vigorous measures for maintaining the authority of the government. The legislatures of New York, Ohio, and Massachusetts at this time offered the whole military power of those states to the president, while the South Carolina legislature declared that any attempt to reënforce Fort Sumter would be an act of war. No further attempt, however, was made at reënforcement during the administration of President Buchanan, which came to an end March 4, 1861. On that day Mr. Lincoln was inaugurated at

Washington. In his inaugural address the president began by declaring that the accession of a republican administration afforded no ground to the southern states for apprehending any invasion of their rights. He said: "I have no purpose, directly or indirectly, to interfere with the institution of slavery in the states where it exists. I believe that I have no lawful right to do so, and I have no inclination to do so. Those who nominated and elected me knew that I had made this and many similar declarations, and had never recanted them." He proceeded to argue that no state upon its own mere motion can lawfully go out of the Union; that resolves and ordinances to that effect are legally void; and that acts of violence within any state or states against the authority of the United States are insurrectionary or revolutionary according to circumstances. "I therefore consider that, in view of the constitution and the laws, the Union is unbroken; and to the extent of my ability I shall take care, as the constitution itself expressly enjoins upon me, that the laws of the Union be faithfully executed in all the states." President Lincoln appointed as his cabinet William H. Seward, secretary of state; Salmon P. Chase, of the treasury; Simon Cameron, of war; Gideon Welles, of the navy; Caleb B. Smith, of the interior; Edward Bates, attorney general; and Montgomery Blair, postmaster general. The last two were from the slave states of Missouri and Maryland. The executive government of the United States was thus transferred from the hands of a party which had held it since the beginning of the century, with two or three brief intervals, during which period of 60 years southern men had occupied the presidential chair for more than two thirds of the time, while the northern men who attained to that high office, with the single exception of John Quincy Adams, were "northern men with southern principles." It was a great and striking change of dynasty, and was naturally followed by profound convulsions. — Meantime the seceded states had been making vigorous efforts to organize and sustain a general government for themselves. On Feb. 4, 1861, a congress composed of delegates from South Carolina, Georgia, Florida, Alabama, Mississippi, and Louisiana met at Montgomery, Ala., and were joined not long afterward by delegates from Texas. Howell Cobb of Georgia, ex-secretary of the treasury of the United States, was elected chairman. A constitution for the provisional government of the "Confederate States of America" was adopted, Feb. 8, which generally resembled that of the United States, but was superseded by a permanent constitution adopted unanimously March 11. This constitution adopted in nearly all its parts the precise language, and followed in its articles and sections the arrangement of the constitution of the United States. The main particulars in which it differed from that instrument were these: In the preamble the words "each state acting in its sovereign and independent character" were inserted to include the doctrine of state sovereignty, and to exclude the argument drawn from the preamble of the old constitution that it had been made by the people of the states collectively, and not by the states themselves. The official term of the president and vice president was extended to six years, and the president disqualified for reëlection. The protective policy was prohibited by the declaration that no duties or taxes on importations from foreign nations should be laid to promote or foster any branch of industry. Export duties were allowed to be levied with the concurrence of two thirds of both houses of congress. The impeachment of any judicial or other federal officer, resident and acting solely within the limits of any state, was allowed by a vote of two thirds of both branches of the legislature thereof, as well as by the house of representatives of congress; but the senate of the Confederate States was to have the sole power to try all such impeachments. No general appropriation of money was allowed unless asked for and estimated by some one of the heads of departments, except by a two-thirds vote in both branches of congress. The object of this was to make each administration responsible as far as possible for the public expenditures. All extra pay or extra allowance to any public contractor, agent, or servant was prohibited, as well as all bounties. Internal improvements by congress were prohibited. The power of the president to remove from office was restricted to removals for special cause, which must be reported to the senate with the reasons therefor, except in the case of the principal officer in each of the executive departments and all persons connected with the diplomatic service. The right of any citizen of one state to pass through or sojourn in another with his slaves was expressly guaranteed. In adjusting the basis of representation and direct taxation, "three fifths of all slaves" are enumerated, instead of three fifths of "other persons," as in the constitution of the United States. The clause relating to fugitives from service or labor in the old constitution was enlarged so as expressly to include slaves, in order to preclude that interpretation which limited its meaning to apprentices and other persons legally bound for a term of years. The African slave trade was prohibited. Slavery in the territories was to be "recognized and protected by congress and by the territorial government." And finally it was provided that "congress may by law grant to the principal officer in each of the executive departments a seat upon the floor of either house, with the privilege of discussing any measures appertaining to his department." Some of these changes were improvements on the constitution of the United States, which the experience of 70 years had shown to be desirable. Others, especially those relating to

protection, bounties, and internal improvements, referred to controverted points in American politics on which public opinion is yet undecided; while those relating to slaves were intended to cover the whole ground of quarrel on which the Confederate States had seceded from the Union. Before the adoption of the permanent constitution, in fact on the day following the adoption of the provisional constitution, that is, on Feb. 9, an election for president and vice president was held by congress, voting by states as that constitution directed. All the states present (the delegates from Texas not having yet arrived) voted for Jefferson Davis of Mississippi for president, and Alexander H. Stephens of Georgia for vice president. Mr. Davis was not a member of congress, and was absent in Mississippi. It was understood that he aspired to the command of the army and did not wish to be president. He however accepted the office, arrived at Montgomery Feb. 16, and was inaugurated on the 18th. Mr. Stephens, who was a member of congress, had been sworn into office as vice president on the 10th. A few days later Mr. Davis appointed his cabinet, as follows: secretary of state, Robert Toombs of Georgia; secretary of the treasury, Charles G. Memminger of South Carolina; secretary of war, Leroy P. Walker of Alabama; secretary of the navy, Stephen R. Mallory of Florida; postmaster general, John H. Reagan of Texas; attorney general, Judah P. Benjamin of Louisiana. All of these except Memminger and Walker had been senators or representatives in the congress of the United States. The principles upon which the new government was founded were very clearly expounded by its vice president, Mr. Stephens, in a speech made by him at Savannah, March 21, 1861, as follows:

"The new constitution has put at rest for ever all the agitating questions relating to our peculiar institutions—African slavery as it exists among us—the proper status of the negro in our form of civilization. This was the immediate cause of the late rupture and present revolution. Jefferson, in his forecast, had anticipated this as the rock upon which the old Union would split. The prevailing ideas entertained by him, and most of the leading statesmen at the time of the formation of the old constitution, were that the enslavement of the African was in violation of the laws of nature; that it was wrong in principle, socially, morally, and politically. Our new government is founded upon exactly the opposite ideas; its foundations are laid, its corner stone rests upon the great truth that the negro is not equal to the white man; that slavery, subordination to the superior race, is his natural and normal condition. This, our new government, is the first in the history of the world based upon this great physical, philosophical, and moral truth. It is the first government ever instituted upon principles in strict conformity to nature, and the ordination of Providence, in furnishing the materials of human society. Many governments have been founded upon the principle of enslaving certain classes; but the classes thus enslaved were of the same race, and enslaved in violation of the laws of nature. Our system commits no such violation of nature's laws. The negro by nature, or by the curse against Canaan, is fitted for that condition which he occupies in our system. The architect, in the construction of buildings, lays the foundation with the proper material, the granite; then comes the brick or the marble. The substratum of our society is made of the material fitted by nature for it, and by experience we know that it is best, not only for the superior but for the inferior race, that it should be so. It is, indeed, in conformity with the Creator. It is not for us to inquire into the wisdom of his ordinances or to question them. For his own purposes he has made one race to differ from another as he has made 'one star to differ from another in glory.' The great objects of humanity are best attained when conformed to his laws and decrees, in the formation of governments as well as in all things else. Our confederacy is founded upon principles in strict conformity with these laws. This stone, which was rejected by the first builders, 'is become the chief stone of the corner' in our new edifice."

—The two governments, that of Washington and that of Montgomery, alike in form and organization, but radically different in principles, thus stood face to face in the month of March, 1861. Between them stood the border states, as they were called, the slave states of Arkansas, Missouri, Tennessee, Kentucky, North Carolina, Virginia, Maryland, and Delaware, which naturally sympathized with the slave states south of them, but in which the Union sentiment was still strong, and the sense of danger from their exposed position was calculated to impress upon the prudent part of their population the necessity of caution and moderation. Both sides were anxious to gain their support, and from the beginning of the secession movement their capitals had swarmed with ardent emissaries, official and volunteer, imploring them to join their brethren of the south. Their population and resources made their accession to either side of great importance; but to the south their assistance was essential in case of war. Their population was between 6,000,000 and 7,000,000, a large majority of whom were whites, while the whole population of the seven seceded states was less than 5,000,000, of whom nearly one half were slaves, of no value for military purposes. On the other hand, the free states, the states certain to uphold the Washington government, numbered 20,000,000 inhabitants, and were incomparably richer in money and credit, and in military and especially naval resources, than the south. They were in fact nearly twice as strong in numbers as all the slave states together, and in wealth and resources were even more formidable than in numbers. But their superiority in these respects was weakened by party divisions. The republican party by its success in the presidential election had obtained control of the national government, and was also in possession of all the free-state governments except that of Oregon. But it found itself everywhere confronted by a democratic minority, little inferior to itself in numbers, exasperated by a defeat at the polls which had wrested from it the control of a continent and the revenues of an empire, and still strongly affected, on the one hand, by the animosities engendered by its long and bitter controversy with the republicans, and on the other by its natural sympathy with the southern democracy, with whom it had been for many years in perfect political alliance and agreement, and from whom it now differed on no point of principle or policy except that of secession. The secession leaders counted largely on the support of the northern democrats, and repeatedly declared that they had positive as-

surances of assistance from them in case the government attempted to assert its authority by force of arms. On this point Horace Greeley in his "American Conflict" says: "The great mails, during the last few weeks of 1860, sped southward, burdened with letters of sympathy and encouragement to the engineers of secession, stimulating if not counselling them to go forward in their predetermined course." In the south, on the contrary, all party lines were obliterated as soon as the states seceded. So confident were the people of their own prowess, and so little acquainted with the spirit and resources of the free states, that there was an almost universal conviction among them that the confederacy was already an accomplished fact, and that the union with the north was for ever ended. A strong party in the south had adhered to the Union until their states seceded, and then, considering the matter practically settled, had transferred their allegiance to the new government.—Meantime a crisis was rapidly approaching. The key of the situation was Fort Sumter. The south regarded its continued occupation by a national garrison as an encroachment upon their sovereignty, and demanded that the intruders should be expelled. The north regarded it as the symbol of the Union on an otherwise rebellious and hostile shore, and were ready to spring to arms to resent an attack upon it. It was known to both sides that the garrison was very small, consisting of less than a company of soldiers, and a few laborers and musicians, and that they were very short of provisions and of ammunition. It was known also that the South Carolinians had been for several months erecting batteries of heavy guns in the most favorable positions for bombarding the fort, and that they had stationed in these batteries some 7,000 troops commanded by Gen. Beauregard, an experienced engineer, who had been an officer of the United States army. About a week after President Lincoln's inauguration a letter was sent to Mr. Seward, secretary of state, signed by John Forsyth and Martin J. Crawford, who claimed to be commissioners from the confederate government, authorized to make overtures to the government of the United States for the opening of negotiations. Mr. Seward replied, by a memorandum dated March 15, that he could not in any way admit that "the so-called Confederate States constitute a foreign power, with whom diplomatic relations ought to be established;" and both he and the president declined official intercourse with the commissioners, who remained for some weeks in Washington, and made other attempts at negotiation, with especial reference to Fort Sumter, of which they demanded the peaceful evacuation, or at least a pledge that it should not be relieved or reenforced. The president declined to give any such pledge, and at a cabinet meeting held March 21 it was determined that a fleet should be sent to the rescue of Major Anderson. A squadron, hastily equipped, and carrying supplies and a body of soldiers, was despatched from New York and other northern ports on April 6 and 7, and on the 8th formal notice was given to the governor of South Carolina that the fleet was on its way to relieve the fort. Gen. Beauregard immediately telegraphed this information to Montgomery, and on the 10th received orders from the confederate secretary of war to demand the immediate surrender of the fort, and in case of refusal to reduce it. The demand was made on the 11th, and being refused, a bombardment began on the 12th, which resulted in the surrender of the fort on the 13th, the fleet, which appeared off Charleston harbor on the 12th, not finding it practicable to assist the garrison. (See SUMTER, FORT.) This event, the details of which as they occurred were transmitted by telegraph from Charleston to all parts of the country, created the greatest excitement both at the north and the south. Charleston was wild with exultation. The bells were rung, guns were fired, great crowds assembled, and the governor made a speech in which he said: "We have humbled the flag of the United States. We have defeated their twenty millions; we have brought down in humility the flag that has triumphed for 70 years; to-day, on this 13th day of April, it has been humbled, and humbled before the glorious little state of South Carolina." At Montgomery there was equal exultation. An immense crowd assembled on the evening of April 12, and was addressed by Mr. Walker, the confederate secretary of war, who said: "No man can tell where the war this day commenced will end, but I will prophesy that the flag which now flaunts the breeze here will float over the dome of the capitol at Washington before the first of May. Let them try southern chivalry and test the extent of southern resources, and it may float eventually over Faneuil hall itself." At Washington the effect of the news was to call forth the following proclamation from President Lincoln:

"Whereas the laws of the United States have been for some time past and are now opposed, and the execution thereof obstructed, in the states of South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, and Texas, by combinations too powerful to be suppressed by the ordinary course of judicial proceedings, or by the powers vested in the marshals by law: Now, therefore, I, Abraham Lincoln, president of the United States, in virtue of the power in me vested by the constitution and the laws, have thought fit to call forth, and hereby do call forth, the militia of the several states of the Union, to the aggregate number of 75,000, in order to suppress said combinations, and to cause the laws to be duly executed. The details for this object will be immediately communicated to the state authorities through the war department. I appeal to all loyal citizens to favor, facilitate, and aid this effort to maintain the honor, the integrity, and the existence of our national union, and the perpetuity of popular government, and to redress wrongs already long enough endured. I deem it proper to say that the first service assigned to the forces called forth will probably be to repossess the forts, places, and property which have been seized from the Union; and in every event the utmost care will be observed, consistently with the objects aforesaid, to avoid any devastation, any destruction of or interference with property, or any disturbance of peaceful citizens in any part of the country. And I hereby command the persons composing the combinations aforesaid to disperse and retire peaceably to their respective

abodes within twenty days from this date. Deeming that the present condition of public affairs presents an extraordinary occasion, I do hereby, in virtue of the power in me vested by the constitution, convene both houses of congress. Senators and representatives are therefore summoned to assemble at their respective chambers, at 12 o'clock, noon, on Thursday, the fourth day of July next, then and there to consider and determine such measures as, in their wisdom, the public interest and safety may seem to demand."

On this call to arms the north, which had been for months patiently though anxiously waiting for the government to act, rose almost as one man. Great meetings were held in all the large cities, in which men of all parties united. The governors of all the northern states responded promptly to the demand for troops. Massachusetts was the first in the field. On the day after the proclamation appeared, four regiments of volunteers, twice the number called for by the secretary of war, mustered with full ranks on Boston common, and three days later one of these regiments, the 6th, was 500 miles on its march to Washington, and was fighting its way through Baltimore on the 19th of April, the anniversary of Lexington and Concord, having been attacked in the streets by a mob of secessionists, whom it repulsed, not without considerable bloodshed on both sides. Pennsylvania was almost equally prompt, and her legislature sanctioned a loan of $3,000,000, and organized a reserve corps besides her quota. New York, called upon for 17,000 men for three months, responded by raising 30,000 for two years, and voted a war loan of $3,000,000. Rhode Island sent her quota at once, with her governor at its head. The other free states did likewise, and men and money were contributed to an extent far beyond what was demanded by the government. On the other hand, the governors of the border states replied to the requisition for troops in a defiant manner, and positively refused to furnish any. Those states, in fact, were as much excited by the fight at Sumter as any part of the nation, and there is no doubt that the attack on the fort was mainly prompted by a desire on the part of the confederate leaders to precipitate the border states into secession. Secessionists from all those states had long been urging upon the leaders at Montgomery and at Charleston the necessity of doing something decisive. "Sprinkle blood in the faces of the people of Alabama," said Mr. Gilchrist, a member of congress from that state, "or they will be back in the Union in less than ten days." "Strike a blow," said Roger A. Pryor, ex-congressman from Virginia, addressing the citizens of Charleston on the eve of the attack on Fort Sumter, "and the moment that blood is shed Virginia will make common cause with her sisters of the south." These persons knew well the spirit of their states. As late as April 4 the Virginia convention, by the decisive vote of 89 to 45, had refused to pass an ordinance of secession. On the 17th, four days after the surrender of Fort Sumter, the same convention in secret session, by a vote of 88 to 55, decreed the separation of Virginia from the Union, and her adhesion to the southern confederacy. A day or two later her military forces, energetically led, were in possession of the great navy yard at Norfolk, and of the United States arsenal at Harper's Ferry, neither of which was sufficiently garrisoned, though they contained millions of dollars worth of arms and ammunition, of incalculable value to the insurgents. At Norfolk alone they obtained 2,000 cannon and the steam frigate Merrimack, one of the finest in the navy. West Virginia, including more than a third of the area of the state and nearly a fourth of its white population, with very few slaves, refused to secede from the Union, but on the contrary seceded from Virginia. A convention of delegates from 40 counties met at Wheeling June 11, and formed a provisional government of men loyal to the Union. Five months later (Nov. 26) another convention assembled at Wheeling, framed a constitution for a new state, which was admitted by congress in December, 1862, and comprises 50 counties and nearly half a million of inhabitants. Tennessee speedily followed Virginia, and seceded May 6, but not without strong opposition from the eastern part of the state, where there were very few slaveholders, and where the Unionists were ably led by William G. Brownlow, Andrew Johnson, Horace Maynard, and other conspicuous citizens. The right of secession from the state, however, was denied them, and for a year or two they were severely persecuted for their fidelity to the Union, and were kept in subjection to the confederacy by military force, until relieved by the advance and victories of the Union armies. Arkansas seceded May 6, and North Carolina May 20. The excitement created by the attack on Fort Sumter had thus carried four states out of the Union. No more states formally seceded. Of the 15 slave states, 11 had now withdrawn. Four, Missouri, Kentucky, Maryland, and Delaware, maintained their constitutional compact, though great efforts were made to induce them to join the south. Missouri and Kentucky were indeed claimed by the confederacy, and were admitted to representation in the confederate congress; and Maryland furnished many soldiers to the confederate army. Missouri was in fact saved from actual secession only by a sharp and bloody struggle between the confederate party led by Claiborne F. Jackson, governor of the state, and Sterling Price, an ex-governor, and the Union party, headed by Francis P. Blair and B. Gratz Brown, who had also the support of the garrison of the United States arsenal at St. Louis, consisting of several hundred troops commanded by Capt. Nathaniel P. Lyon.

—Immediately after the occurrences at Fort Sumter Jefferson Davis summoned the confederate congress to meet in Montgomery on April 29. In a session of three weeks measures were taken to raise money, to organize an army, and to issue letters of marque to privateers. A loan

was authorized to the amount of $50,000,000, in addition to a previous loan of $15,000,000. These sums were to be raised by the sale of confederate bonds, redeemable at the expiration of 20 years, with interest at 8 per cent. per annum. The president was authorized to accept the services of 100,000 volunteers, to serve during the war. There being no means to create a regular navy, 15 or 20 small vessels were commissioned as privateers, and in the course of the summer a considerable number of prizes were taken or destroyed. On May 21 the congress adjourned to meet again on July 20 in Richmond, Va., which had been agreed upon as the confederate capital, and continued to be such until the fall of the confederacy. Nearly all the available troops of the confederacy were concentrated in Virginia, along a line extending from Harper's Ferry to Norfolk. Their strongest position was at Manassas Junction, on the direct road from Washington to Richmond, where Beauregard was in command with a force of 20,000 men. The entire force in Virginia, including militia, was about 60,000, and was under the command of Gen. Joseph E. Johnston, formerly of the United States army. Among the other officers who soon became distinguished were Robert E. Lee, T. J. Jackson, commonly called "Stonewall" Jackson, E. Kirby Smith, James Longstreet, and A. P. Hill. To oppose this formidable force the national government concentrated an army at Washington under the nominal command of the aged and infirm Gen. Winfield Scott. This force mainly occupied the Virginia side of the Potomac opposite the city. The United States government at this time was very much embarrassed by want of arms. The loss of Harper's Ferry left it with no arsenal of construction but that of Springfield, Mass. It had men in abundance, but its forces lacked not only arms but discipline. Many of its best officers had resigned from the army to enter the southern service, and its troops were raw levies compared with those of the south, who had been in training for several months longer. Every exertion was made to remedy these deficiencies. Agents were sent abroad to purchase arms, and the private manufactories in the northern states were worked to their utmost capacity. On April 19 the president proclaimed a blockade of all ports in the seceding states; and as the existing navy was not sufficient for the purpose, the navy department bought or chartered hundreds of merchant vessels and fitted them for war. On May 3 the president issued a proclamation calling for 42,000 volunteers to serve for three years, and also for 22,000 men to be added to the regular army and 18,000 to the navy. Persons of known or suspected treasonable conduct were arrested by order of the secretary of state, and confined in some of the national forts, and military officers were instructed to disregard all writs of habeas corpus issued for the release of such prisoners. These measures of the president were without sanction of law, but congress at its next session formally approved them, and declared them legalized and valid on the ground that they were war measures demanded by the exigency of circumstances and essential to the safety of the republic.—We have now traced the origin and progress of secession from its commencement in November, 1860, to its culmination in May, 1861, when it resulted in one of the greatest wars recorded in the annals of mankind. The movement had been singularly rapid, because the material and the motives for it had been long accumulating, and it was controlled by able and experienced politicians, who perfectly understood the temper and the feelings of the population with which they had to deal, and skilfully worked upon their ambition, their prejudices, their hopes, and their fears. On the confederate side of this great struggle were enlisted states containing five or six millions of whites, more than a million of them capable of bearing arms, brave, high-spirited, and warlike, accustomed to the use of weapons from childhood, confident of their own superior prowess and despising that of their opponents, and confident also of the rectitude of their cause and of the soundness of the principle of state sovereignty, for which mainly they had appealed to the gage of battle. On the other hand was a nation of 20,000,000, equally brave, though less accustomed to the use of arms, preferring peace to war, and if possible even more confident of the justice of their cause, and prepared to make any sacrifices for the salvation of the Union and the preservation of their country from the fate of the Spanish American republics. Both sides were of the same lineage, spoke the same language, professed the same religion, and, with the sole exception of slavery, differed little in manners, morals, general culture, and civilization. In the south agriculture was the predominant pursuit, and cotton its most valuable product. In the north agriculture was more diversified, and in addition to it a vast amount of manufacturing and commercial industry was carried on. The north was richer, and by its marine could command the sea, while its foreign trade supplied it with whatever arms and munitions of war it failed to produce within its own limits. The south at first was largely infatuated with the notion that the "northerners would not fight, and that if they did fight every southerner was a match for five of them." A delusion even more general in the south was expressed by the current phrase, "Cotton is king;" by which was meant that the cotton of the south was an essential element of the prosperity of the north and of the manufacturing countries of Europe; and that if the southern supply of the material was cut off, intolerable suffering would result, especially in England and France, which would compel the governments of those countries to interfere in behalf of the south. This delusion was soon dispelled by the logic of events. Though the price of

cotton advanced greatly all over the world in consequence of the blockade and of the diminished production in the south, this very advance in price stimulated its production in other countries, and India, Egypt, and South America supplied the market with large quantities. Europe was not driven to interfere in our civil strife, and her greatest powers, though with the exception of Russia they evidently hoped the south would succeed, did not dare openly to take her side, nor to give any but indirect and furtive encouragement to her agents, who made strenuous efforts to get foreign recognition and assistance for the confederacy. Nor did the south receive that assistance from the northern democrats on which she had counted so confidently. The great body of the party rallied round the flag of the Union, and volunteered in vast numbers for the defence of the nation, while many prominent democratic politicians attained the highest ranks in the army. Only a very small number of northern democrats joined the confederate forces, and the northern opponents of the government made no more formidable demonstration than a riot in New York, which broke out on occasion of a draft for the army, during the absence of military forces from the city, and was easily quelled when the soldiers returned. Politically the gravest demonstration made by the opposition was at their national convention which met at Chicago Aug. 29, 1864, and resolved that "four years of failure to restore the Union by the experiment of war" required that "immediate efforts be made for a cessation of hostilities." They offset this, however, by nominating as their candidate for president a distinguished commander of the Union army, Gen. George B. McClellan. The defeat of the democrats in the presidential election of 1864, and the reëlection of President Lincoln, followed by brilliant successes of the Union armies under Grant and Sherman, deprived the confederates of their last hope, and made it apparent to all the world that the great conflict was drawing to its close. The Confederate States, stripped of men and money, their resources exhausted, their finances ruined, and the fairest portions of their territory ravaged by fire and sword, could no longer continue the unequal struggle, and presently collapsed, the people quietly submitting to their fate.—The main military events of the war were the battle of Bull Run, July, 1861; the capture of Fort Donelson, February, 1862; McClellan's campaign on the peninsula of Virginia, April to July, 1862; the battle of Shiloh, April, 1862; the capture of New Orleans, April, 1862; the second battle of Bull Run, August, 1862; the battle of Antietam, September, 1862; the battle of Fredericksburg, December, 1862; the battle of Stone river, December, 1862; the battle of Chancellorsville, May, 1863; the battle of Gettysburg, July, 1863; the capture of Vicksburg, July, 1863; the battle of Chickamauga, September, 1863; the battle of Chattanooga, November, 1863; Banks's Red river campaign, March and April, 1864; the battles in the Wilderness, at Spottsylvania Court House, and in southern Virginia, May and June, 1864; Sherman's Atlanta campaign, May to September, 1864; the battle near Nashville, December, 1864; Sherman's march to the sea, November and December, 1864; the siege of Petersburg, June, 1864, to April, 1865; Sherman's march through Georgia and the Carolinas, January to April, 1865; and finally the surrender of Lee's army in Virginia and of Johnston's in North Carolina, in April, 1865. The adjutant general of the confederate army, in a statement made since the close of hostilities, estimated the entire available confederate force capable of active service in the field at 600,000 men. Of this number not more than 400,000 were enrolled at any one time, and the Confederate States never had in the field at once more than 200,000. When the war ended the southern army was reduced to less than one half of this number. Scanty as these forces were compared with the northern armies, they made a most resolute and gallant defence, especially in Virginia under the command of Gen. R. E. Lee. Nor did they fail in any part of the war to exhibit manly courage, patient endurance of privations, and a steadfast adherence to what they considered the cause of their country. The last great military act of the war, the surrender of Johnston to Sherman, was followed on May 14 by that of Gen. Taylor with all the remaining confederate forces east of the Mississippi, and on the 26th of the same month by that of Gen. Kirby Smith with all his command west of the Mississippi, both to Gen. Canby. With these surrenders ended all military opposition to the government at Washington. The flag of the United States was lowered at Fort Sumter by Major Anderson, April 14, 1861. On the fourth anniversary of that event, April 14, 1865, the same flag was raised on Fort Sumter by the same Anderson, now promoted to the rank of major general. On April 3, when it became known in Richmond that Lee was defeated and that the city must be evacuated, Jefferson Davis fled southward in hopes of escaping by sea. He had made his way to southern Georgia when he was arrested near Irwinville by a party of Union cavalry sent in pursuit of him. He was taken to Fortress Monroe and kept for a considerable time in confinement, but was finally liberated on bail. For the history of the civil war, see the articles on the various battles under their own names, the notices of the prominent statesmen and generals on both sides, and UNITED STATES.—Nothing like an adequate collection of the official documents relating to the civil war has ever been attempted. "The Rebellion Record" (9 vols. 8vo, 1861–'5), edited by Frank Moore, contains many documents and reports not otherwise accessible. The lack of published official reports on the operations of the Union

armies is in a good degree supplied by the "Report of the Joint Committee of Congress on the Conduct of the War." This embraces the sworn testimony of a very large proportion of the officers who bore a prominent part in military operations. The confederate "Report of the Operations of the Army of Northern Virginia" (3 vols. 8vo), embracing the period from the beginning of the seven days' battles down to the battle of Chancellorsville, is remarkably full and complete. Besides the general report of Lee, and detailed reports from each division commander, there are nearly 400 from subordinate officers. For all other periods the accessible confederate reports are nearly worthless. Of special reports, that of McClellan on the "Organization and Campaigns of the Army of the Potomac," and that of Pope describing the operations of the army of Virginia, are valuable. A monograph by Hotchkiss and Allan, confederate engineers, relating to the battle of Chancellorsville, is of great value on account of its accurate military maps of the region of the "Wilderness." Among the general histories of the war are to be noted those of Horace Greeley, "The American Conflict" (2 vols. 8vo, 1866); John W. Draper, "History of the American Civil War" (3 vols. 8vo, 1868–'70); A. H. Guernsey and H. M. Alden, "Harper's Pictorial History of the Great Rebellion" (4to); Edward A. Pollard, "The Lost Cause: a new Southern History of the War of the Confederates" (1866); Alexander H. Stephens, "The War between the States" (2 vols. 8vo, 1868–'70); and William Swinton, "Campaigns of the Army of the Potomac" (1866), and "The Twelve Decisive Battles of the War" (1871).

CONFESSION, Auricular, in the Greek and Roman Catholic churches, the acknowledgment of sins to an authorized priest, made with the view of obtaining absolution. According to the doctrine of the Catholic church, confession is obligatory on all who have committed mortal sin after baptism. The confession of venial sins is recommended as salutary, and generally practised by the more devout. Catholic theology teaches that the requisites to a good confession are, that it should be entire, conjoined with sincere contrition and a firm purpose of amendment, and followed by acts of penance or satisfaction to the justice of God. By a canon of the fourth council of the Lateran (1215), which is a formal reënactment of a general law previously existing, all who are conscious of mortal sin are bound to confess at least once a year. Those who are in danger of death, or about to expose themselves to the danger of death, are similarly bound. Much more frequent confession is recommended, and very generally practised. No priest can hear confessions or give a valid absolution, except to a person in danger of death, unless he has jurisdiction from the ordinary of the diocese, and such jurisdiction is more or less limited by reservations to the bishop or the sovereign pontiff. A priest is forbidden, under the severest ecclesiastical penalties, to divulge anything disclosed under the seal of confession, even when questioned in a court of justice; and he may not even speak to the penitent of the sins he has confessed, outside of the confessional, without his express permission. According to Catholic theology, auricular or private confession has been practised from the time of the apostles, although there has been a change of discipline since the early ages, adopted by the church on account of a change of circumstances. Public confession was practised in these early times, and very severe and long penances were imposed on those who were guilty of grievous public sins. After the fervor of the first ages had diminished, and sins had become more frequent, these public confessions were an occasion of scandal, and the severe penitential canons were injurious rather than profitable. Nectarius, patriarch of Constantinople, abolished the office of public penitentiary in his cathedral at the close of the 4th century, and from that time public confession fell into disuse in the East. In the West it was disused after the 7th century. Public confession was never required except when the sins were public, and the public confession of secret sins was only counselled in certain cases, as a penance. Many sins, especially under the severe laws of Christian emperors, could not have been publicly confessed without exposing the criminal to the penalty of death; as for instance, murder, the adultery of a woman, and that of a man with a woman of noble birth. Secret sins were first privately confessed to a priest, and if the penitent desired to confess them publicly, the confessor judged whether this were expedient. Auricular confession is recommended by some divines in the Anglican and Lutheran churches as a salutary practice, and even by the prayer book of the church of England.—For information on private confession in the church of England, see *Visitatio Infirmorum*, by W. H. Cope and H. Stretton (London, 1850). For the Catholic literature and theology on confession, see Renaudot's *Perpétuité de la foi sur les sacrements.*

CONFIRMATION, in some churches a sacrament, in others a rite supplemental to baptism. Its history is traced to the apostles (Acts viii. and xix., Eph. xix., &c.), who were wont to lay hands on neophytes and to pray in order that they might receive the Holy Ghost. In the succeeding ages, to "the imposition of hands" is found added the "chrismation," or anointing of the forehead with chrism. The entire rite came to be designated as "the sacrament of chrism," "the receiving of the cross," the "sign of the Lord," "the seal," and "the signing or sealing," *consignatio.* Hence the recipients were called *consignati*, "signed;" and the place in or near the baptistery, set apart for confirmation, was known as the *consignatorium.* In the ancient sacramentary of Pope Gelasius (492), confirmation is ordered

to be administered in this form: "The sign of Christ unto life eternal." The earliest use of the term itself occurs in the "Apostolic Constitutions" (B. III., c. 17), where "the chrism" is called *confirmatio confessionis*, a sanction of the baptismal profession of faith.—In ancient times bishops administered confirmation immediately after baptism; both priests and bishops do so still in the Greek church; and in the Latin church bishops may and sometimes do confer both sacraments at once, even in the case of infants. Priests can confirm only by delegation of the pope, in foreign missions, and during persecution, &c.—In Germany, where the reformation had discountenanced confirmation altogether, its use was restored by Spener, and the Lutheran and Reformed churches now practise it as a renewal of the baptismal covenant. The age for this is from 13 to 16. The church of England calls it "a solemn, ancient, and laudable custom, continued from the apostolic times," and fixes for the rite the age of from 16 to 18. This meets the wishes of the low church, who reject the sacramental virtue of confirmation; but high church men urge a much earlier age.

CONFLAGRATION (Lat. *conflagratio*, a burning together), the destruction by fire of a considerable part of a large town or city. The term is also applied to fires which overrun a large extent of prairie or forest; such as that in October, 1871, which swept over a great portion of the peninsula between Lakes Huron and Michigan. By this conflagration it is estimated that 4,000,000,000 feet of timber was destroyed, and thriving towns, farm and school houses, churches, stock, and crops were consumed; and nearly 3,000 families, or about 18,000 persons, were rendered homeless. —Conflagrations have been sometimes the consequence of earthquakes and volcanic eruptions, but oftener of accident; and in early times very frequently cities were wantonly burned by conquerors. The final destruction of Nineveh was doubtless accomplished by fire; but whether this took place at the time of its capture is uncertain. The fact of the destruction by conflagration is attested by the heaps of charcoal and other signs of devouring fire which are still found among the ruins of all the royal palaces at Nimrud, Koyunjik, and Khorsabad. Fire had also an important part in the ruin of Babylon, as is shown by the vivid account of Jeremiah, whether it is to be regarded as history or prophecy: "The mighty men of Babylon have forborne to fight; they have remained in their holds; their might has failed; they became as women: they have burned her dwelling places; the passages are stopped, and the seeds they have burned with fire; the broad walls shall be utterly broken; and her high gates shall be burned with fire." All which seems to imply that the city was dismantled, and that fire was brought in to destroy the palaces and fortifications; but the brick walls and ordinary houses were left, and their almost entire disappearance is owing to time and the elements. Ctesiphon and Seleucia, cities built in a great measure from the ruins of Babylon, were repeatedly sacked and burned. Seleucia, at the time of its destruction by the Romans under Lucius Verus, about A. D. 165, is said to have contained 500,000 inhabitants, of whom 300,000 were massacred. So complete was the destruction that 40 years later the site of the city was a marsh, filled with wild game. Bagdad, partly built from the ruins of Seleucia, famous during the middle ages, and yet the most considerable city of Mesopotamia, was in 1258 captured, sacked, and partly burned by Hulaku, the grandson of Genghis Khan; and again by the Turks in 1638, when a large part of the population was put to death, and a great part of the city burned. Damascus was captured and burned by the Assyrians under Tiglath-Pileser; the capture and sack is among the subjects depicted on the extant Assyrian monuments. The story of the Trojan war is perhaps partly mythical; but this much at least appears clearly historical: About 1184 B. C. the city of Ilium, in the Troad, was besieged, finally taken by the Greeks, and destroyed, fire being largely used in the destruction. The cities of the ancient Egyptians had little wood in their construction, and contained little combustible material; and their destruction appears not to have been accomplished by conflagration. Alexandria, founded by Alexander the Great in 332 B. C., was a Greek city rather than Egyptian, and was several times the scene of great fires; as in its blockade in the time of Julius Cæsar, and in the 4th century, when the temple of the Serapeum was destroyed by Christian fanatics. Tyre was captured by Alexander the Great in 332 B. C., after a long siege; and even after the Macedonians entered the city an obstinate resistance was kept up from the roofs of the houses. Irritated by this, the conquerors set fire to the city, massacred 8,000 of the inhabitants, crucified 2,000, and sold 30,000 more into slavery. During the long period between Nebuchadnezzar and the final Turkish domination, Jerusalem was for nearly a score of times in a great measure destroyed by conflagration. It was taken by Nebuchadnezzar in 586 B. C., when the temple and all the buildings were burned, and the walls completely demolished. After half a century or more a new city grew up on the site of the old one; this was mostly destroyed by fire under Antiochus Epiphanes, about 170 B. C., and again by Antiochus Sidetes. In 63 B. C. it was captured by Pompey, and partly burned. It was restored by Herod. Judea having revolted against the Romans, Jerusalem was captured by Titus, A. D. 70, after a siege of five months. Irritated by its stubborn resistance, the Romans undertook its total destruction, fire being brought largely into play. The city was totally demolished, with the exception of three towers and a portion of the wall, which were left standing to shelter the legion who were

left as a garrison.—Carthage, the ancient rival of Rome, was several times burned; first in 146 B. C., after the close of the third Punic war, when by order of the Roman senate it was totally destroyed; everything that could be burned was given to the flames, the site of the city was ploughed over, and the furrows were sown with salt. In course of centuries a new town sprang up near the site of the former one, which grew to be a place of great importance, hardly inferior to Rome itself. In 439 it was taken almost by surprise by Genseric, partially burned, and made the capital of the Vandal kingdom in Africa. It was retaken by Belisarius in 533, and in 698 taken and utterly destroyed by Hassan, the Saracenic governor of Egypt. So thorough was the destruction, mainly by conflagration, that hardly a vestige remains to mark the site of either the Phœnician or the Roman Carthage.—Athens was taken by Xerxes in 480 B. C., and the next year was totally burned by the Persians under Mardonius. It was soon rebuilt, and though several times afterward captured and dismantled, it appears never to have been again destroyed by fire. Corinth, having joined the Achæan league, was devoted to destruction by the Roman senate, and was burned to the ground by Mummius in 146 B. C., the same year in which Carthage was destroyed.—The first general conflagration of Rome was about 390 B. C., when it was burned by the Gauls. An extensive fire is noted as having occurred during the reign of Tiberius, near the beginning of our era, in which nearly all the buildings on the Cælian hill were destroyed. But the great conflagration took place in A. D. 64, in the reign of Nero. It began at the lower part of the circus maximus, in some shops where combustible materials were stored up, spread northward over the whole Palatine hill, and was finally arrested at the foot of the Esquiline. The conflagration raged for six days and seven nights. Out of the fourteen regions or districts into which the city was divided, three were completely destroyed, and seven very nearly so. Dion Cassius and Suetonius affirm that the fire was the immediate work of Nero, who was disgusted with the narrow winding streets of the city; and the more judicious Tacitus rather favors the imputation. But the probability is that this is unfounded. Nero was at Antium when the fire broke out, and did not return to Rome until his own palace was threatened, which he was unable to save. It is also affirmed by Tacitus, but upon grounds hardly historical, that in order to avert from himself the suspicions which attached to him, he charged the crime upon the Christians, against whom about this time a severe persecution was instituted. Notwithstanding the great loss occasioned by this conflagration, it proved in the long run an advantage to the city; for the narrow crooked lanes were rebuilt on a regular plan, with broad streets, open places, and less lofty houses; and many excellent measures were carried into effect for guarding against conflagrations in the future. Nero himself supplied the proprietors of the burnt district with money for rebuilding, and specified a time within which the houses were to be completed; and Rome rose from her ashes far more splendid than before. In the succeeding three centuries several great fires are recorded. In 188 the capitol was destroyed by lightning; in 248 Pompey's amphitheatre was burned. Early in the 5th century Rome began to suffer from the approach of the northern barbarians, and much of it was burned by the hordes of Alaric in 410 and of Genseric in 455.—Constantinople, under its present name and its old one of Byzantium, has often been visited by conflagrations. During the crusades it suffered severely. In 1203 it was taken by the Latins; fire was set to it, and, according to Gibbon, "during eight days and nights the conflagration spread above a league in front, and from the harbor to the Propontis, over the thickest and most populous region of the city. It is not easy to count the stately churches and palaces that were reduced to a smoking ruin." When finally captured by the Turks in 1453, it was not burned. Indeed, the general practice of the Turks, unlike that of most conquering hordes, has not been to destroy the towns which they captured. Under Turkish rule it has been frequently the scene of great accidental conflagrations. The most noted of these in recent times are those of 1852, when 3,500 houses were destroyed; of 1865, in which 8,000 houses and numerous public buildings were burned; and of 1870, when 3,000 houses were burned in the suburb of Pera, and as is estimated from 500 to 1,000 persons lost their lives.—Few cities of either ancient or modern times have escaped notable conflagrations. Most of these are noticed under their respective names. Of those in London many have become historical. In 962, and again in 1087, a great part of the city was destroyed by fire. In 1212 a fire broke out on the Southwark side of London bridge, and crossed to the opposite side of the river, hemming in a numerous crowd, who flung themselves into boats and barges; 3,000 persons are said to have been drowned, and a great part of the city as it then existed was burned. The "great fire" in London took place Sept. 2–6, 1666. It began in a baker's house in Pudding lane, behind the Monument yard, and extended from the tower to the Temple church, and from the northeast gate to Holborn bridge, covering a space of 436 acres of the most densely peopled part of the city. During four days 89 churches, including St. Paul's, the city gates, the royal exchange, the custom house, Guildhall, Sion college, and many other public buildings were burned. This great fire destroyed 13,200 houses, and laid waste 400 streets; it is said that 200,000 persons whose homes had been destroyed encamped in Islington and Highgate fields. The London monument, erected in

1671–'7, from designs by Sir Christopher Wren, stands near the spot where the conflagration originated. It is a column 202 ft. high, including the base. It bore originally four inscriptions, of which three were in Latin. The English inscription, as cut in 1681, ran thus: "This pillar was set vp in perpetval remembrance of that most dreadful burning of this Protestant city, begun and carryed on by y^e^ treachery and malice of y^e^ popish faction, in y^e^ beginning of Septem. in y^e^ year of our Lord 1666, in order to y^e^ carrying on their horrid plot for extirpating y^e^ Protestant religion and old English liberty, and y^e^ introducing popery and slavery." This inscription, falsely attributing the fire to a deliberate plot of the Catholics, gave rise to the indignant couplet of Pope:

> "Where London's column, pointing at the skies,
> Like a tall bully, lifts its head and lies."

This inscription was obliterated under James II., recut under William III., and finally erased in 1831, by order of the common council of London. Many great fires, which may be properly called conflagrations, have since occurred in London. Among these are: the fire at Wapping in 1715, when 150 houses were burned and 50 lives lost; in Cornhill yard in 1748, long styled the second great London fire, when 200 houses were burned; in 1780, by the Gordon mobs, in which the destruction was great; in 1794, at Wapping, in which 630 houses were burned, including an East India warehouse, containing 35,000 bags of saltpetre, the total loss being estimated at £1,000,000; in 1803, when the great tower over the choir of Westminster abbey was burned; in 1805, 1808, and 1809, when the Surrey, Covent Garden, and Drury Lane theatres were burned; in 1814, when the custom house, warehouses, and public records were destroyed; in 1834, when the houses of parliament were consumed; in 1856, when the works of Scott Russell and co. were for the third time burned; in 1859, at London docks, where a great explosion took place; in 1861, at Cotton's wharf and other wharves near Tooley street, where were stored oil and other combustible substances. This fire lasted nearly a month, involving several lives, and a loss of property estimated at £2,000,000. For the last 40 years the fires in London, great and small, have averaged about 1,200 a year. In 1854 there were 953; in 1857, 1,113; in 1861, 1,183; in 1864, 1,715; in 1867, 1,397; in 1869, 1,572.—Copenhagen suffered from great conflagrations in 1728, when 1,640 houses were burned; in 1795, when the number was 950; and most severely in 1807, when without any declaration of hostilities the city was bombarded by the English, because the king refused to surrender to them his fleet. By this bombardment and the consequent conflagration 350 buildings were totally destroyed, 2,000 more rendered uninhabitable, and 2,000 citizens were killed.—Moscow has several times suffered severely from fire. In 1536 there was an accidental fire by which the city was nearly destroyed, and 2,000 persons perished. In 1571 the Tartars set fire to the suburbs, and a furious wind driving the flames into the city, a considerable part was reduced to ashes. It is said that 100,000 persons perished in the flames or by the sword, but this is hardly credible. In 1611 it was again burned by the Poles. But the great conflagration of 1812 is one of the most noted on record, not only on account of its magnitude, but for its historical importance. The French entered the city Sept. 14, Napoleon proposing to make it his winter quarters. On that very day several fires broke out, but little attention was paid to them by the invading army until the next two days, when they had acquired great headway. On the 17th a high wind arose, and the flames spread rapidly in every direction; by the 18th the whole city appeared a sea of flame, and by the evening of the 20th nine tenths of it was reduced to ashes. The total number of buildings destroyed is stated at between 13,000 and 15,000. The Russians at the time, in order to cast odium upon the French, attributed this conflagration to the orders of Napoleon. It is now, however, generally acknowledged that the fires were the work of the Russians themselves, and that they were kindled by the orders of the governor, Rostoptchin, acting beyond all doubt under the sanction of the emperor Alexander, without which it is hardly conceivable that the governor would have ventured such a step. The object was to deprive the French army of shelter from the winter. Ample precautions had been taken to insure the entire destruction of the city. Inflammable materials were placed in deserted mansions in every quarter, and the torch was applied simultaneously all over the city. In burning the French out of their proposed winter quarters no provision had been made for the safety of the inhabitants, who were driven to seek shelter in the surrounding woods; and it is affirmed that more than 20,000 sick and wounded perished in the flames. The direct loss to the French is put down at 40,000; and beyond this it in the end involved the retreat in the dead of winter and the almost complete annihilation of the great French army. This act, which the Russians at the time repudiated, is now considered by them as their highest glory, the greatest example in history of national self-sacrifice for the destruction of an invader.—Hamburg was the scene of a great conflagration in 1842. The fire broke out May 5, and raged till the 8th, widening its sweep as it advanced, crossing streets and leaping over broad canals, and destroying fully one third of the city. It overran 61 streets, besides numerous courts and alleys, burning 1,749 buildings, among which were the finest churches and public edifices. Large contributions for the relief of the sufferers were made all over Europe, amounting in all to not less than $2,000,000. The authorities took advantage of this conflagration to introduce an extensive system

of improvements, by laying out new and broader streets, establishing water works, and constructing sewers. For these improvements a loan of about $20,000,000 was effected, which now constitutes a considerable part of the debt of the city.—Paris has been singularly exempt from conflagrations, no great fire having occurred until those of May, 1871, caused by the communists; and these are remarkable rather for the pecuniary and historical value of the objects destroyed than for the absolute extent of the conflagration, the incendiaries not having been able to carry out their design of burning the whole city. The palace of the Tuileries was burned down, and the magnificent library of the Louvre destroyed; the Palais Royal was much injured; and of the hôtel de ville, containing works of art of priceless value which can never be replaced, only the bare skeleton of the walls remained. Various other notable palaces and public buildings were laid in ashes.—Of the great conflagrations which are known to have occurred in the cities of China we have only scanty accounts. In 1822 a fire in Canton destroyed 15,000 houses. Yedo, in Japan, seems to rival Constantinople in the frequency and extent of its conflagrations. In 1806 a fire destroyed the palaces of 37 princes, each almost a town in itself, and 1,200 lives. In 1854 an earthquake laid a great part of the city in ruins, and occasioned an extensive conflagration. The loss of life from the falling buildings and fire is stated at 200,000; but this may be presumed to be an exaggeration.—In New York considerable fires took place in 1741, which were attributed to incendiaries, and seven persons were hanged. In 1776 a fire destroyed 493 houses in Broadway, laying an eighth of the city in ashes. In 1778 another broke out on a wharf on the East river, destroying 300 buildings. In December, 1804, 40 warehouses in Wall and Front streets were burned. The first great conflagration took place Dec. 16, 1835, in what was then the main business portion of the city, the district lying east of Broadway and north of Wall street. There were burned the merchants' exchange, several banks, and 648 large warehouses, all filled with valuable merchandise; the entire loss was not less than $18,000,000. In July, 1845, another great fire took place partly on the same ground, but extending further to the south and west, the loss amounting to about $5,000,000. On Sept. 9, 1848, a destructive conflagration took place in Brooklyn, which spread over seven of the principal business blocks of the city in and near Fulton street, destroying about 500 houses.—San Francisco within the first two years of its existence had five great fires. In a year after the first discovery of gold the place had grown from a small village to a city of 30,000 inhabitants. The houses were closely crowded together, and built of the most combustible materials, while there were hardly any appliances for extinguishing fires. The first conflagration was on Dec. 4, 1849, the loss being about $1,000,000; the second, May 4, 1850, loss $3,000,000; the third, June 14, 1850, loss $3,000,000; the fourth and greatest, May 2, 1851, loss $7,000,000; the fifth, June 22, 1851, loss $2,000,000. In this series of conflagrations, following closely upon each other, the total loss was $18,000,000, an amount in proportion to the number of inhabitants fully equal to that of the great fire in Chicago.—Columbia, the capital of South Carolina, was almost totally destroyed by fire on the 17th and 18th of February, 1865. The Union army, under Sherman, had just entered the city, which had been evacuated by the confederate forces, under the immediate command of Wade Hampton. A large quantity of cotton lay piled in the streets, bales of which were cut open and set on fire. A strong wind took up the burning cotton, starting fires in many parts of the city at once, and it was only through the exertions of the Union troops that any portion of it was saved. When the confederate army evacuated Richmond, in April, 1865, Ewell, who commanded the rear guard, gave orders for the firing of the warehouses situated in the heart of the city; and when the Union advance guard entered they found a great conflagration raging, and before it could be extinguished a third of the city, embracing the entire business portion, was consumed. A very great fire, accidentally kindled in a sash factory, devastated Charleston on the night of Dec. 11, 1861. Several churches, and nearly all the public buildings, banks, and insurance offices, were burned. The value destroyed was estimated at $10,000,000. In February, 1865, when the city was evacuated by the confederate forces, fire was set by order of Gen. Hardee to all the warehouses containing cotton; a serious conflagration ensued, and about 200 persons were killed by an explosion of gunpowder.—On July 4, 1866, a destructive conflagration began in Portland, Me., occasioned by a fire cracker. Aided by a strong southerly gale, it swept due north, destroying everything in its way for a space a mile and a half long by half a mile wide. More than 50 buildings were blown up in the vain hope to check the march of the flames. It was finally extinguished on the afternoon of the 5th, after nearly one half of the finest part of the city had been destroyed. The entire loss was not less than $10,000,000.—The most destructive conflagration which ever occurred in the United States, and one of the most destructive on record, was that of Chicago, Oct. 8–10, 1871. In the region where the fire broke out were many small wooden buildings and several lumber yards. From these the fire swept westward into the part of the city which contained most of the warehouses and public buildings. The navigable river presented no barrier to the spread of the conflagration. Buildings supposed to be fire-proof burned like tinder, and the fire died out after three days, almost entirely from lack of fuel. The conflagration swept over 2,100 acres, and destroyed

17,450 buildings, among which were 41 churches, 32 hotels, 10 theatres, 8 public schools, 5 elevators containing 1,642,000 bushels of grain, 3 railroad depots, 9 daily newspaper offices, the court house, custom house, post office, chamber of commerce, and gas works. It is estimated that 98,500 persons were rendered homeless, and 200 lost their lives. The total loss is put down at $198,000,000, of which $140,000,000 was in goods and merchandise, being 47 per cent. of the entire valuation of the property in the city. Contributions for the relief of the sufferers, amounting in all to not less than $7,000,000, were received from all parts of the country and from Europe. No city ever recovered so speedily from such a blow. Within a year nearly all the burnt district had been rebuilt; and within less than two years the business of the city was supposed to have become greater by a quarter than before the fire. —Boston was in November, 1872, visited by a conflagration second in extent, in the United States, only to that of Chicago. The fire was discovered early in the evening of the 9th, and spread with great rapidity; but it appeared to have been brought under control by noon of the 10th, when an explosion of gas took place, and the conflagration became more furious than before, lasting until the morning of the 11th. The space burned over was about 70 acres, only one thirtieth of that at Chicago; but this was almost entirely occupied for business and manufacturing purposes, and was the very centre of the wholesale trade in dry goods, clothing, boots and shoes, and wool. About 800 buildings were burned, many of them of granite, five or more stories high. There were few public buildings or private residences in this space, and so not many persons were rendered homeless, and not more than 15 lives were lost. The destruction of property was about $80,000,000.

CONFUCIUS, the Latinized name of the Chinese philosopher Kung-fu-tse (Reverend Master Kung), a man who stands in a relation to the civilization of China similar to that which Moses and Socrates combined hold to western civilization. He was born, according to the best Chinese authorities, June 19, 551 B. C., in the small kingdom of Loo, which now forms a portion of the province of Shantung. Having lost his father when only three years old, his education was left to his mother, who directed his studies, and seems to have cherished in him a strong sense of morality. In his 17th year he entered the public service, but quit it at the age of 24 in order to mourn the death of his mother for three years. During this time he devoted himself to a careful study of the ancient writings, the morality of which impressed him with the idea of restoring the former usages and the doctrines of the sages of old. Having prepared himself for this task, he set himself up as a teacher at the age of 30. His fame soon spread, and his scholars and admirers increased in numbers. In order to propagate his doctrines still more extensively, he visited neighboring countries, preaching and teaching wherever he went. About 506 B. C. he returned to his native country, where he was once more called into public office and attained the high position of prime minister. But he remained in it only a short time, the intrigues of a neighboring prince having succeeded in compelling him to retire into private life. Accompanied by a number of his disciples, he moved into the dominions of the prince of Wei, and devoted the rest of his life to the dissemination of his ideas. His death occurred at the age of 72, in 479 B. C., about 10 years before Socrates was born. More fortunate than he, Confucius had during his lifetime already obtained an unbounded popularity, bordering almost on worship. Posthumous honors in great variety were conferred on him. He left a single descendant, his grandson, Tse-tse, through whom the succession has been



Confucius. (From the image in the temple of Confucius at Canton.)

transmitted to the present day. In A. D. 1671 there were 11,000 males alive bearing his name, most of them of the 74th generation. These descendants of Confucius constitute a distinct class in Chinese society. The city of Kiofoo-hien, which contains his tomb, is chiefly inhabited by his descendants, four fifths of its families bearing his surname. A magnificent temple, the most superb in China, occupies the site of his residence. In it is a statue of the sage, from which it appears that he was a tall man of imposing presence, with a large head and a red face. His tomb is a huge mound overgrown with trees and shrubs.—Considering the vast number of those by whom the doctrines of Confucius have been and are implicitly taken as the highest authority, and the influence they have exerted on the entire social and political edifice of a nation comprising fully one fourth of mankind, there is no founder of any religion who can boast of success

greater than that of Confucius. He was not, however, the originator of a religious creed. While striving to introduce a ritual more minute than that of Moses, he rejected divine revelation, and erected a structure of moral philosophy founded upon the wants and tendencies of human nature. There was a time when European philosophers vied with one another in extolling the merits of Confucius as one of the sublimest teachers of truth among mankind. This was especially done by the French encyclopædist philosophers of the 18th century, who, in order to strengthen the position they had taken against divine revelation, proposed to prove by the examples of Confucius, Socrates, and others, that the holiest truths had found their best interpreters among pagan philosophers. Certain it is that the doctrines of Confucius bear a strong resemblance to those of his Greek contemporaries, not merely in their ethical tendency, but also in the abstruse metaphysical reasoning upon which they are apparently founded. The books containing them, partly written by Confucius himself, partly by his disciples (see CHINA, LANGUAGE AND LITERATURE OF), bear almost the same relation to the Chinese world as the Bible does to the Christian. The knowledge of one's self is, according to Confucius, the basis of all real advance in morals and manners. The duties man owes to society and himself are minutely defined by him; and there are many passages in his writings closely approaching the Christian standard of morality. Having been asked whether any one sentence could express the conduct most fitting for one's whole life, he replied: "Do not unto others what you would not have them do to you." "It cannot be denied," says Dr. Williams, "that among much that is commendable, there are a few exceptionable dogmas among his tenets; but compared with the precepts of Grecian and Roman sages, the general tendency of his writings is good; while in their general adaptation to the society in which he lived and their eminently practical character, they exceed those of western philosophers."

CONGAREE, a river of South Carolina, formed by the union of the Broad and Saluda at Columbia, near the centre of the state. After a course of about 50 m. it receives the Wateree, below which it is called the Santee. The river is navigable by steamboats to Columbia.

CONGESTION, strictly speaking, an accumulation of any liquid in an organ or tissue, but generally limited in medical works to an abnormal amount of blood in the vessels of a part otherwise healthy, and in most cases from an enlargement of the minute arteries and capillary blood vessels. Congestion may also be passive from obstruction to the circulation from external or constitutional causes. Congestion, called *hyperæmia* by Andral, may be entirely independent, as to its cause, of the organ or tissue in which it is seated. The highly vascular organs, and those which receive the blood most directly from the heart, as the brain, the lungs, the liver, and the spleen, are the most frequent seats of congestion, together with their capillaries. Congestion differs from inflammation, to which, however it may lead, in its anatomical characters: in the former the organization and vital characters are unaltered, and the post-mortem appearance of sanguineous accumulation may be removed by the action of water; but in the latter the redness is permanent, the consistence is changed, and various morbid products are effused; though congestion precedes inflammation, it does not necessarily proceed to it. There are certain conditions of the circulation in which congestion may be said to be normal and physiological; as, for example, in the erectile tissue of the nipple and other organs, and in the superficial coloration of the blushing cheek. Andral makes three degrees of congestion: 1, in which an increased amount of blood is sent to a part; 2, in which, in addition, the capillaries are dilated, with retardation of the circulation, a tendency to coagulation of the blood, and darker color of the tissues; this is the true type of congestion; 3, in which there is complete stagnation of the blood, with a darker coloration. As the first of these degrees is less than congestion, as ordinarily understood, so the last is more than congestion, involving a new condition of the affected parts. As congestion is a commencement of disease in many organs, the functional disturbances arising from it are various. It is not always easy to ascertain the predisposing and exciting causes of congestion, though it may be stated as a general rule, that repeated stimulation of an organ or tissue predisposes it to congestion; inflammation in a neighboring part may induce congestion, as for instance in the brain during inflammation of the air passages; an unequal distribution of blood from cold or other causes may cause pulmonary or other visceral congestions. The redness and swelling are in proportion to the accumulation of blood; the heat and pain are trifling, unless the congestion be extreme; the distention of the vessels may end in their rupture, and in circumscribed or diffused hæmorrhage, though effusion of blood may also occur from a diseased state of the fluid, as in typhus, scurvy, and the œdematous congestions of chlorosis, without rupture of the vessels. It appears from the experiments of Magendie that a diminution in the proportion of fibrine in the blood, from any cause, predisposes to congestion; Andral noticed also a diminution of this element in many cases of cerebral congestion, beginning with headache, dizziness, and bleeding at the nose, and ending often in coma and apoplexy. Congestions of the brain and spinal cord, if of long duration, or ending in hæmorrhage, are highly dangerous and frequently fatal; the spleen is sometimes congested to the point of rupture, causing death, without any premonitory symptoms. Frequent congestions of an organ bring on hypertrophy, thickening,

and a disposition to inflammation; they are generally of short duration, and vary in severity from the apoplectic congestion of the brain to the simple swelling of a hæmorrhoidal tumor; their seat is very frequently changed in many hysterical females. The liver is almost always more or less congested at the moment of death; this condition may exist in its whole substance, the lobules presenting a nearly uniform dark color throughout; or the centres alone may be thus colored, the circumference being lighter; in this, the first stage of hepatic venous congestion, in which the hepatic veins are full and the portal plexus empty, the appearance is due to the continuance of capillary action after the general circulation has ceased; in the second stage, the portal as well as the hepatic venous system is congested, and the obstructing cause may be either in the liver, in the heart, or in the general venous system; occasionally the portal system is congested, the marginal portions of the lobules being darkest colored. A common form of venous congestion depends on deficiency of tone in the veins, which prevents the normal ascent of the blood from the lower parts of the body, thereby distending the vessels and causing an accumulation of blood; in this condition the serous parts of this fluid are prone to escape, forming dropsical effusions and anasarca. This inability of the blood to ascend against gravity is found in a great variety of chronic diseases, the consequences of improper food, unhealthy habitations, or even the natural results of old age; the want of tone in the system is aggravated by ulcers, gangrene, and effusions of blood and other fluids into the cavities and tissues.

CONGLETON, a market town and borough of Cheshire, England, 22 m. S. of Manchester; pop. in 1871, 11,344. It is situated in a deep valley on the river Dane. The principal street, a mile in length, is paved and lighted with gas, and has many old houses of timber framing and plaster. There is an Episcopal church, a Catholic and several dissenting chapels, a town hall, public assembly rooms, and a number of charitable institutions. Silk manufacture is the staple industry, but there are also manufactories of cotton and leather. Near it are lime quarries worked under a cliff 1,091 ft. high.

CONGLETON, Henry Brooke Parnell, lord, a British statesman and author, born July 3, 1776, died June 8, 1842. His father was Sir John Parnell, chancellor of the Irish exchequer, who was second in descent from the poet Parnell. He entered parliament at an early age, and for nearly 35 consecutive years represented the constituencies of Queens county, Ireland, and Dundee, Scotland, in the house of commons. In 1841 he was raised to the peerage as Baron Congleton. He belonged to the most liberal section of the whig party, and was a cabinet minister under the Grey and Melbourne administrations. He was one of the first to advocate the repeal of the corn laws. He is the author of treatises on "The Principles of Currency and Exchange," "The Penal Laws against the Irish Catholics," "Paper Money, Banking, and Overtrading," "Financial Reform," &c. He suffered from alienation of mind in the latter part of his life, and died by his own hand.

CONGLOMERATE, in geology, a rock composed of rounded pebbles, such as are seen frequently forming a beach rolled by the waves. These fragments of older rocks, cemented together by a calcareous, silicious, or argillaceous paste, constitute a conglomerate, or, as it is sometimes called, a puddingstone. The pebbles may be of any size larger than sand; when composed of the latter, the rock is called a sandstone. Strata of this nature are found in all the geological formations of sedimentary origin. The most interesting example, perhaps, is the great conglomerate bed which forms the floor of the coal formation, and is composed of white quartz pebbles of all sizes, up to that of a man's head. The rock is traced beneath the coal formation of the middle states, and a similar one occupies the same relative position in England, where it is known by the name of the millstone grit.

CONGO, a country of Africa, extending from about lat. 4° 30′ to 8° 30′ S., bounded N. by the river Congo or Zaire, E. by a range of mountains parallel to the coast, S. by the river Dande, which separates it from Angola, and W. by the Atlantic ocean. Numerous rivers descend from the mountains on its frontier and flow through it to the sea. Of these, the Lilundo, Ambriz, and Onzo are the most considerable. The coast region of Congo is unhealthy because of its alluvial plains and forests, but the inland climate is comparatively salubrious. The soil produces in abundance an immense variety of tropical plants and fruits. Several species of grain unknown in Europe and America are raised on the banks of its rivers, the most valuable of which is the *luko* or *luno*, which yields a white and delicious bread. The principal products are, however, rice and maize, of which three crops are often raised annually. Of the forest trees, the most remarkable is the baobab. The oil palm is also common to this country with all the regions of western Africa. Prof. Smith, in the expedition of 1816 to Congo, brought home to Europe 620 species of plants and flowers, 250 of which are said to be altogether new. The elephant, lion, leopard, zebra, gazelle, and antelope are the principal animals. The rivers are frequented by hippopotami, turtles, and crocodiles, with excellent fish, one of which, the *sparus*, often weighs from 30 to 60 lbs., and is of very delicious flavor. No domestic animals are employed as beasts of burden or in the performance of agricultural labor. Sheep and horned cattle are scarce, but goats, hogs, and poultry are plentiful. Among the reptiles are the boa, the chameleon, and the flying lizard or palm rat, which is deified by the natives. Ostriches, peacocks, and parrots are abundant. Some of the insect

tribes are very venomous. The sting of the *banzo* is said to be mortal; the proboscis of the *insondi* penetrates the trunk of the elephant and inflicts madness and death. The imports are chiefly cloths, stuffs, carpets, and hardware and earthenware from Europe, together with fruits, grain, and various other kinds of American produce from Brazil. The exports consist principally of ivory, furs, and slaves, who were formerly shipped annually in large numbers to the western world. Congo was once exceedingly populous, but the ravages of the slave trade for three centuries have so wasted and diminished the people that the statements of the early Portuguese missionaries relative to its ancient populousness are now often discredited. One of these relates that a king of Congo marched against the Portuguese at the head of 900,000 men; but Tuckey found no town with more than 600 inhabitants. The



Royal Guard.

natives of Congo are of ordinary stature. Their color and features are less strongly marked than those of most other negroes, but they are both more indolent and less intelligent than the generality of their race. Polygamy is tolerated among them, but adultery is severely punished. Slavery is the penalty for all crimes save murder, the perpetrator of which is put to death. When a chief dies, they kill a certain number of slaves proportioned to his rank, that he may have attendants in the other world. The people practise fetish worship. They are unacquainted with the plough, and prepare the ground for the seed by scratching it with a hoe. The rights of property are rigidly observed among them, and its subdivision is sometimes carried to such excess that three or four persons will own a fowl or a hog between them. Society in Congo may be said to consist of the following classes: 1. The *chenoos*, or chiefs, and their families. The dignity of chenoo is hereditary in the female line; when a chief dies he is succeeded not by his son, but by a brother or maternal uncle. The chenoo is little distinguished from his subjects by his dress or dwelling. His sceptre is a small staff of black wood, inlaid with lead or copper. 2. The *mafooks*, who collect the revenue and carry on trade. 3. The *foomoos*, or farmers, who have houses and lands of their own, two or three wives, and a few slaves to work for them. 4. Fishermen and laborers, who have no property of their own. 5. Domestic slaves, who are said to be not transferable, except when guilty of some great crime. The kingdom of Congo is divided into several provinces, each of which has its *banza* or capital and chief, who owes feudal allegiance to a lord paramount at the capital, Congo-banza, or San Salvador, near the Lilundo, about 50 miles from the sea. This potentate is styled the *lindy* of Congo; but, though once very formidable, he is now unable to check the encroachments of the provincial and village chenoos, most of whom are practically independent, and frequently at war with each other and the lindy.—Congo was discovered in 1484 by the Portuguese, under the command of Diogo Cam, who soon afterward made settlements and erected forts along its coast. The language is said to resemble that of the Caffres and Bechuanas.

CONGO, or Zaire, the largest river of western Africa S. of the Niger. It has also been called the Barbela, but the native appellation is Moienzi Enzaddi, "the great river," or "the river that absorbs all other rivers." Its source is unknown, but tradition among the natives places it in a marsh situated near the equator, about lon. 18° E. It flows into the Atlantic ocean near Point Padron, near lat. 6° S., lon. 13° 30′ E., and is from 7 to 10 m. wide and more than 160 fathoms deep at its mouth, with a velocity of between 4½ and 5 knots an hour. The Congo has been ascended by Europeans to a distance of 280 m. inland. In the lower part of its course it exceeds 5 m. in width, and, with the exception of a portion called the narrows, maintains a breadth varying from 1 to 4 m. throughout its whole known extent. The narrows extend some 40 m. above a point 140 m. from the coast, where the tide is still perceptible, causing a rise and fall of from 12 to 16 inches. Here the river flows turbulently between steep banks of rock not more than 500 yards apart, and is obstructed by rapids and the so-called Yellala, or cataract, of which the fall, however, is only 30 ft. in 1,500. Geographers estimate that the Congo drains an area of 800,000 sq. m. Regarding the depth of the river as 60 ft. and its breadth as 9,000 ft., which are believed to be fair approximations, the outflow of water is 1,800,000 cubic feet per second. This is greater than that of the Mississippi.

Between the cataract and the sea not a single tributary falls into the river on either side. Near the coast the stream is studded with islands, and the adjacent country is low, level, and swampy, abounding in mangrove growths. Further inland hills rise parallel to the banks, and not far from them, to a height of 2,000 ft. The vegetation of the valley is for the most part exceedingly luxuriant. The river forms the N. boundary of the kingdom of Congo, which it separates from Loango. It was once thought to be the outlet of the Niger. The German geographer Petermann regards it as identical with the great river Lualaba recently discovered by Livingstone in central Africa, and hence as connected with the vast lacustrine system of the equatorial region. Capt. J. K. Tuckey of the British navy, who explored it in 1816, then expressed the opinion that "the Zaire will be found to issue from some large lake or chain of lakes, considerably to the northward of the line." Further explorations of the Congo by scientific expeditions from Europe are now (1873) in progress.

CONGO SNAKE (*amphiuma means*, Linn.), one of the batrachian family of the *amphiumidæ*, destitute of gills except at the earliest periods of life, breathing by exposed spiracles or branchial openings on the sides of the neck, and undergoing, according to Holbrook, no metamorphosis. Its general aspect is snake-like; the head large, lips thick and extensile, snout depressed and rounded, neck contracted with a transverse fold at the throat; numerous small teeth on the maxillary and palate bones; a single spiracle on each side of the neck; limbs four, the anterior very small, with two fingers, and the posterior still smaller, with two toes. It is found in the southern and southwestern United States, attaining a length of 28 inches, of which the head is 2 and the tail 6 inches; deep bluish black above, tinged with violet, lips and throat lighter, and under surface dark purple. These animals live in muddy waters, or in the mud, burrowing in the ditches of the rice fields, and feeding on small fish, mollusks, and insects; they are sometimes found on land, apparently seeking a favorable locality. They are considered by the southern negroes as highly venomous, but are really entirely harmless. —In the *A. tridactylum* (Cuv.), the anterior fingers are three and the posterior also; the different number of fingers is the principal distinction between this and the other species.



Amphiuma means.

CONGREGATIONALISM, a form of church polity, or a system of ecclesiastical organization, management, and control. Its correlatives are Presbyterianism, Episcopacy, Papacy. Its essential peculiarity is that it maintains the independence of each particular congregation of Christians, and their sufficiency to perfect and preserve their own organization, to elect and inaugurate their own officers, and, with and through those officers, to perform all needful ecclesiastical acts. Like every other system of church order, it may be connected with any form of doctrine, and with any particular mode of worship. This polity in its general principle is adopted not only by those known as Congregationalists, but also by the Baptist denomination, and in this country by Unitarians and Universalists, and by some who hold the theological opinions of the Methodists. In the common, though more limited and strictly denominational sense in which it will be used in this article, the word Congregational designates a class of churches which hold in general that system of theology which was maintained by Augustine and Calvin, and which has been explained, advocated, and amended by the theologians of New England in their successive generations.—Congregationalists define a church to be an organization of professed believers, statedly meeting in one place, and united together by covenant for mutual watchfulness and edification, for the maintenance of divine worship and the observance of Christian ordinances. There is no "Congregational church of the United States," but a collection of Congregational churches. Hence their efforts are not directed so much to "church extension" as to the multiplication and strengthening of churches. The definition given implies an organization, and not a mere accidental assembly, composed of believers in Christ, who profess to be converts, and who give credible evidence of piety by lives of holiness; they become members by election and by mutual covenant, for the sake primarily of the objects stated. Church members, in their individual capacity, are reasonably looked to as leaders in every good work; they are expected, as opportunity offers and conscience dictates, to coöperate in missionary, educational, and reformatory enterprises. In fact, these enterprises owe their chief strength and efficiency to the enlightened and conscientious support of Christians; yet a church in its organic constitution does not exist specifically for any such enterprise, and is seldom called upon as an organization to endorse or espouse specific measures of social, political, or moral reform extraneous to its own body. There is some difference of opinion concerning the relation of the baptized children of Christian parents to the church; but the universal usage is to admit them to full communion only upon satisfactory evidence of their conversion and piety. A church thus defined is to be distinguished from the congregation, which includes all who meet in the same place, non-communicants as well as the church members;

from the society, which is a legal term, denoting those especially incorporated for holding real estate and providing for the expenses of the church; and from the parish, a term nearly synonymous with the two preceding words, but sometimes also used to mark territorial limits. Hence also are derived such terms as church members, pew-owners, and parishioners. It is of course an object with every church to gather around it a congregation from which it may receive accessions to its ranks; but the society or parish organization is an unessential thing, and simply a matter of convenience. Congregationalists insist on the competence of each church to elect its own officers, to regulate its own concerns, to receive or reject candidates for membership, and to pronounce censure upon any one of the brotherhood who walks disorderly; and on its independence, in these matters, of all dictation from other churches, its allegiance being due to Christ alone. Moreover, it is a principle of Congregationalism that in the administration of church affairs the brethren of the church have equal rights. Each male member of full age is entitled to vote on all matters affecting its interests.—The internal structure of a Congregational church is very simple. Its officers are a pastor or pastors and deacons, the latter elected from and by the church, and the former usually called from the same office in some other church, or selected from candidates for the ministry who have a general recommendation from those already in the pastoral office, and who have made trial of their gifts in the pulpit to the satisfaction of the congregation. In the election of a pastor, it is usual for the church to nominate to the society, and upon their concurrence an invitation is given to the candidate. Provision is made for his support, a revenue for this purpose being secured by subscription or by a tax, or by the rent of seats in the house of worship. Upon his acceptance he is inducted into office by a council, being ordained if he has never been set apart for the work of the ministry, but otherwise only installed. It is usual also for churches to appoint a clerk to keep their records, and a committee of the brethren, who, in connection with the pastors and deacons, examine candidates for admission, inquire concerning cases of scandal, if any arise, and have a general oversight of the interests of the church. The pastor is the moderator of the church, the spiritual counsellor of its members, and its authorized teacher, who has entire control of the pulpit, administers the ordinances of baptism and the Lord's supper, and performs the marriage ceremony. The deacons are officially the almoners of the church charities, being specially charged with responsibility for the sick and needy, while, in consequence of their position and experience, they are naturally looked upon as the counsellors of the minister. Congregationalists hold to but one order or rank in the ministry, the deacons being only laymen. Licentiates are not ministers, but simply candidates for that work. Evangelists are ministers who preach and administer the ordinances, but who have no permanent place of labor. Missionaries are ministers who have been sent to destitute places, or to foreign lands, after ordination. Ministers who are employed to preach to churches year by year, without the formalities of an installation, are sometimes called stated supplies. The use of the terms bishop and overseer, as designations of church officers, is not common in Congregational churches; but when they are employed, they denote simply the pastor of a church. The Baptists frequently designate their ministers as elders. In early times the New England churches made a distinction between the work of a pastor, a teacher, and a ruling elder, and these three officers formed a presbytery in every church, whose concurrence with the brotherhood was necessary for the consummation of every church act; but for a long time the pastor has been the sole representative of this presbytery, and the distinction is known only as a matter of history. The Congregational "ruling elder" is not to be confounded with the ruling elder of the Presbyterian church. The former was an ordained and ordaining minister, though he was not a professional preacher, and did not administer baptism and the Lord's supper. Congregationalists advocate and practise church discipline by means of admonition and rebuke, and an entire withdrawal of fellowship. This is done by the votes of the brethren, after patient waiting and a full hearing of facts. Its design, so far as the offender is concerned, is to bear testimony against his fault, and to express to him the conviction of the church of his danger if he fails to acknowledge and forsake his sin. So far as the church is concerned, an act of excommunication frees its members from responsibility for him whom they disown. Excommunication is attended with no civil disabilities, and one who has been cut off may be restored to fellowship upon confession and repentance.—The liturgy of Congregational churches is as simple as their organization. The ordinary public service of the Sabbath provides for extemporaneous prayers, the singing of psalms and hymns, the reading of Scripture, and delivery of a sermon, written or unwritten. The order is modified when desirable, and the exercises close with the benediction. No audible responses are made as prayer is offered, but in theory it is accepted as the devout desire of each worshipper, while in song all may pour forth their hearts before God in vocal utterance. The custom in respect to posture during prayer and singing varies in different congregations. The most usual is to sit during prayer and stand during singing. A form is used in the reception of members, in which usually their assent is asked to the covenant of the church and to the confession of faith adopted as the common expression of their views of Christian doctrine. Some Congrega-

tional churches have adopted a form of prayer for their own use in public worship, and congregational singing is now generally practised in churches of this order.—For the office of the ministry in the Congregational churches several things are requisite. A personal and experimental knowledge of divine truth is indispensable. To this must be added usually a liberal education and a familiarity with theological science. One having these qualifications, and desirous of becoming a preacher, may, upon examination by an association, be recommended to the churches as a candidate. If any church then elects him as pastor, and he accepts the invitation, a council is called to examine and ordain him. The services at ordination are performed by the ministers invited to the council, and include not only devotional exercises, but a special sermon; the ordaining prayer, in which the candidate is solemnly set apart for his office with the laying on of the hands of other ministers; the charge, in which he is reminded of the duties of his office; and the right hand of fellowship, which is given him in the name of the ministers and churches, with their Christian salutations.—Without admitting any right of churches to exercise authority and control over each other, Congregationalists seek to strengthen bonds of love and fellowship between all the churches of Christ, and especially between those of the same faith and order. Neighboring churches may be regarded as so many Christian families, having common sympathies and aims, desirous of promoting each other's welfare, ready to assist and advise as occasion may require, at liberty to suspend intercourse as a last resort, but not authorized to dictate measures or prescribe laws for each other. This mutual fellowship finds expression in various ways. The pastors of neighboring churches frequently exchange pulpits for a Sabbath; membership in one church is recognized as a ground of invitation to communion with others; church members changing their residence are dismissed and commended by letter to other churches which they desire to join, and thus their connection is transferred from one organization to another. The censures pronounced by a church are also respected by those in fellowship with it. Any church may call a council by letters addressed to neighboring churches, to give advice. This step is customary at the settlement and dismissal of pastors, and at the organization of a church; and a council thus convened, consisting of a pastor and a delegate from each church invited, is regarded as a representative of all the churches. A member thinking himself aggrieved by church action has a right to demand a council, and to designate half the churches to be invited; if his request is refused, he may call an *ex parte* council. Such councils dissolve when their business is ended. Occasionally, councils are more permanent bodies, and are called consociations, and sometimes conventions. Such bodies, however, should not be confounded with presbyteries, from which they differ both in their structure and in their powers. A presbytery is composed of representatives from church sessions; a consociation, of delegates from the churches directly. A church may at any time withdraw from a consociation without impairing its standing. The powers of a consociation are delegated and defined by the churches, and may at any time be curtailed or withdrawn, or the body itself may be dissolved without affecting the existence of the churches connected with it. In the Congregational system the particular church is the source of all ecclesiastical power and privilege. Sometimes neighboring churches unite in conferences for religious services and for reports of benevolent operations. Associations are in general composed of ministers, who meet for personal improvement and intercourse, and also to examine the credentials and attainments of candidates for the ministry, and recommend them to the churches. Sometimes associations include also a delegation from the churches, but without having authority in ecclesiastical matters. The general associations are organizations, made up of representatives from the local associations, meeting annually, but not infringing upon the independence of the churches. They may recommend, but cannot speak authoritatively. Occasionally larger synods or conventions have been held, though purely for deliberative and declaratory purposes; as at Cambridge, Mass., in 1648; Saybrook, Conn., 1708; Albany, 1852; and Boston, 1865. The last included over 500 delegates from more than 24 states, and made important declarations of faith and polity. In 1871, at Oberlin, Ohio, a national council of 290 delegates, from 25 states, organized a permanent body, to meet triennially, under the name of "The National Council of the Congregational Churches of the United States." Thus Congregationalism insists on the fellowship of the several churches no less than on the independence of each church. The churches are independent as respects authority, not as respects communion. "Those devout and studious men in England, who reduced to practice the conclusion that churches in modern times, like those in the apostolic age, should be quite independent of lords or commons, or of king or Cæsar, and equally independent of a supposed national church unknown in the New Testament and to the early ages of ecclesiastical history, were at first called Independents; and in England the pædobaptist churches, independent of the state, and independent of any existing or imaginary church of England, have always been distinguished by that name." In America different circumstances have led to the general use of the term Congregationalists.—The doctrines taught in the Congregational churches profess to be in accordance with the Scriptures, and correspond in general with those taught in the articles of the Church of England, and

with the confession and catechisms compiled by the assembly at Westminster in 1643. It is customary for each church to have a summary of tenets in which its members are agreed, and to which the assent of candidates for membership is expected. These summaries differ in minuteness and in phraseology, and from time to time may be modified to meet prevalent forms of error, and bear testimony to the truth. Inasmuch as the inspired word of God is received as the only perfect standard of belief and rule of duty, church creeds have not usually been employed to exclude from communion the real subjects of experimental religion. They are intended to express, "not denominationalism, but catholicity." Many of the churches of New England were constituted without particular creeds, and candidates for admission added to the relation of their religious experience either a confession of faith of their own composing, or an intimation of some received confession to which they adhered. Congregational churches are pædobaptist, recognizing the right of Christian parents to present their children for baptism, which is regarded as the counterpart of circumcision and the seal of God's covenant with Abraham. While the principles of Congregationalists allow them to recognize other local churches not conforming exactly to their faith and order, they do not hesitate to appeal to Scripture in support of their own customs. There they claim to find evidences of a popular church government, analogous to that in the Jewish synagogues; distinct local churches, instead of one national or provincial church, *e. g.*, the seven churches of Asia Minor; the right exercised in those churches of electing officers and teachers, as an apostle, Acts i.; deacons, Acts vi., 2 Cor. viii. 19; elders, Acts xiv. 23; also the right of administering ecclesiastical discipline, Matt. xviii. 15–18, 1 Cor. v. 3–5, 2 Cor. ii. 6–11, &c.; and an identity of bishops with presbyters, Acts xx. 17, 28. They find confirmation of their views, not only in the history of the apostolic churches, but in the course of events in the next century, according to the concessions of ecclesiastical historians of other denominations, such as Waddington, Mosheim, Neander, and Gieseler. —The influence of Congregationalism has entered most fully into the development of our national history, especially in New England and the northwest. The Congregationalists, while claiming Scriptural warrant for their polity, do not feel themselves troubled in making the admission that the discovery and practical use of their principles is of recent date. Relying on present evidences of life and truth in churches, they do not feel themselves bound to trace the visible links by which the ordinances have been transmitted to them since the apostolic days. In their view each local church exists really and rightfully, not because it existed in a previous generation, but because it holds to the head, which is Christ, and is composed of men renewed and sanctified. He who would trace their history should go back 300 years, and examine the state of things in the established church of England when Queen Elizabeth's accession to the throne made her the supreme head of the church. The Puritan party in that church grew up out of an unwillingness to conform to usages which they esteemed idolatrous, such as the wearing of the surplice, the use of the sign of the cross, and kneeling at the communion. Persecution followed. Some of the Puritans disowned the church entirely, and became separatists; others adhered to it, protesting against its errors, and were simply nonconformists. Of the former class was Robert Brown, who in 1586 propounded a theory of church government, more radical and exclusive than that which was afterward advocated by John Robinson, who is generally esteemed the father of modern Congregationalism. Before the close of the century the Brownists were numbered by thousands. In 1602 "several religious people" in the north of England, driven by their troubles "to see further into these things by the light of the word of God," determined to "shake off this yoke of anti-Christian bondage, and, as the Lord's free people, join themselves by covenant into a church state, to walk in all his ways, made known or to be made known to them, according to their best endeavors, whatever it cost them;" and, added Gov. Bradford nearly 30 years after, with touching simplicity, "that it cost them something, this ensuing history will declare." Over a portion of this church, which had been divided for the convenience of its scattered membership, Robinson was pastor, and in 1608 he went with it to Holland. There they remained several years, until it became evident that a return to England was hopeless, and that Holland was not the place for their permanent home; and having great hope of advancing the kingdom of Christ by coming to this western world, they prepared for another removal. The church was again divided; the pastor remained temporarily with the majority in Leyden, and the colony took with them their elder, William Brewster, it being agreed that those who went first should be an absolute church of themselves as well as those who stayed. This young church, receiving Robinson's benediction at Delft Haven in 1620, was transported in the Mayflower to Plymouth, where the colonists, having first organized themselves as a civil body politic, landed, Dec. 21, literally "a church without a bishop, and a state without a king." Robinson died in 1625, before he could join them in America. This was the first church in New England. The first church formed in New England was that gathered at Salem, Aug. 6, 1629. The first settlers of Massachusetts Bay had apparently no intention at the outset of separating from the church of England, and their ministers were persons who had been episcopally

ordained; but once in America, there was, as Robinson had predicted, but slight difference between the nonconformists and the Plymouth pilgrims. The same thing is true of the settlers of the Connecticut and New Haven colonies, who sought to be free, not from the Anglican church, but from its errors and corruptions. Notwithstanding the hardships involved in the planting and training of Christian churches in this new land, the Congregationalists who remained in England were even less favorably situated for extending their views of church polity. The civil commotions in the middle of the 17th century, and the persecutions and ridicule it encountered in the reign of Charles II., checked the growth of the system in its youth, while the distinctions of society and the disabilities resting on dissenters from the established religion have been a perpetual incubus upon it.—The Congregational ministry has been filled by well educated men. The earliest of them were graduates of the English universities. Some of them were men of rare attainments and scholarship. Harvard college was established at an early day, with special reference to the wants of the churches. Before 1640, 77 clergymen had left the pastoral office in England for the work of the ministry in New England, and 14 more, pursuing a course of theological study, had come here to complete it, and to enter the ministry. In 1665 the commissioners of Charles II. reported of the people of Connecticut, "that they had a scholar to their minister in every town or village." The Congregational churches of Connecticut down to the year 1832 had had 947 ministers, of whom all but 33 were regular graduates of some college. Among eminent men of this denomination it is sufficient to mention the names of John Milton, John Owen, Howe, Watts, Doddridge, J. Pye Smith, Harris, and Wardlaw; and in this country, the Mathers, the Edwardses, Shepard, Bellamy, Hopkins, Emmons, Dwight, Stuart, and Taylor.—The Congregationalists generally have carried their liberality so far as to neglect in great measure the extension of their polity in its pure form. Multitudes of them have gone into other ecclesiastical connections, by an easy transfer, in changing their residence, and particularly in emigrating westward. The Presbyterian family of churches has been greatly indebted to this largeness of spirit and lack of denominational zeal. The present century has been distinguished for large and efficient plans of benevolent action. In many of these the Congregationalists have taken the lead, furnishing men and means without grudging.—The "Congregational Year Book," published by the Congregational union of England and Wales, contains lists of churches connected with county associations, and an alphabetical list of Independent ministers in Great Britain and the colonies. In the summary reported for 1872, it is stated that the number of county associations and unions throughout the British empire, and in the foreign missions conducted by British missionaries in Madagascar, was 75 (40 in England, 16 in Wales, 8 in Scotland, 1 in Ireland, 9 in colonies, 1 in Madagascar); of pastors, 2,716; of ministers without pastoral charges, 603; of churches, 3,609. There were 29 colleges and institutes, with 567 students. The number of periodicals conducted by Congregationalists in the British empire was 4 annual, 2 quarterly, 21 monthly, and 3 weekly, in the English language, and 10 periodicals in Welsh. The British Congregationalists, like other evangelical dissenters in England, do much for the support of the London missionary society, which in the year 1871–'2 disbursed £113,213, of the British and foreign Bible society, of the religious tract society, and of other similar institutions. The most important among the strictly Congregational societies are the home missionary society, established in 1819, the receipts of which in 1871–'2 were £6,591; the Irish evangelical society and Congregational home mission, established in 1814 (income, £2,902); and the Colonial missionary society, established in 1836 (income, £2,900). In France there is a "Union of Evangelical Churches," which embraces Congregational as well as Presbyterian societies (numbering 45 in 1872), but the former are in a large majority. There were also 9 Independent churches unconnected with the union, and 19 churches supplied by the evangelical society of France. In Switzerland there are evangelical free churches of the same order in the cantons of Geneva, Bern, Vaud, and Neufchâtel; and in Belgium there are 15 churches of this class. According to the "Congregational Quarterly" for January, 1873, there were in 1872 in the United States 2,487 Congregational churches, 318,916 church members, and 371,110 pupils in Sunday schools. Besides a large number of colleges in whose administration this denomination takes an active part, it has theological seminaries at Andover, Bangor, New Haven, Hartford, Oberlin, Chicago, and Oakland, Cal. Congregationalists were formerly associated with the New School Presbyterians in the American board of commissioners for foreign missions; but the union has of late been dissolved, and the board is now under the exclusive control of the Congregational churches. Its receipts for the year ending October, 1872, were $428,693. It sustains 16 missions, with 77 stations, 445 out stations, 173 churches, and 9,019 church members. The American home missionary society had an income of $294,566, and the American missionary society of $330,-146. The periodicals published in the interest of Congregationalism embrace 4 quarterlies and 7 weeklies, besides several Welsh publications.—The writers and authorities upon this subject are numerous. Among more recent ones, in whose volumes will be found abundant references to the older, we mention Davidson on the "Ecclesiastical Polity of the New Testament;" Uhden on the "New England The-

ocracy" (written from a German standpoint and translated by Mrs. H. C. Conant); Clark's "Congregational Churches of Massachusetts;" Felt's "Ecclesiastical History of New England;" Cumming's "Dictionary of Congregational Usages and Principles;" Sawyer's "Organic Christianity of the Church of God;" Coleman's "Primitive Church;" Wellman's "Church Polity of the Pilgrims;" and Dexter's "Congregationalism."

CONGRESS, in international politics, an assembly of the sovereigns or plenipotentiaries of several states to determine questions and concert measures of common interest. The term is of modern origin, the earliest important European congress having been that of Münster and Osnabrück, which assembled in 1644, and concluded the peace of Westphalia in 1648. The subsequent congresses or conferences of most general interest have been those of the Pyrenees (1659), of Nimeguen (1676–'79), of Ryswick (1697), of Utrecht (1712–'13), of Aix-la-Chapelle (1748), of Teschen (1779), of Rastadt (1797–'99), of Erfurt (1808), of Châtillon (1814), of Vienna (1814–'15), of Aix-la-Chapelle (1818), of Carlsbad (1819) and Troppau (1820), of Laybach (1821), of Verona (1822), and of Paris (1856).—The term congress is also sometimes given to literary and scientific associations. It is also the designation of the combined senate and house of representatives which make the legislative branch of the government of the United States and the Spanish American republics, and of the house of representatives in the Spanish cortes.

CONGREVE, William, an English dramatist, born at Bardsey, near Leeds, in February, 1670, died in London, Jan. 19, 1729. He received his early education in Ireland, and proposed to study law, but applied himself to writing for the stage. His first comedy, "The Old Bachelor," was received with great favor at the Drury Lane theatre in 1693. In the following year appeared "The Double Dealer;" in 1695, "Love for Love;" and in 1697, his tragedy of "The Mourning Bride." The opening line of the latter, "Music hath charms to soothe the savage breast," has often been quoted; and Dr. Johnson considered the description of a cathedral which occurs in the play as the most poetical in the whole range of the English drama. His writings have been severely censured for their licentiousness; but his comedies abound in witty dialogue and lively incident; they secured for him a high reputation, and the admiration of Dryden and of Pope, the latter of whom dedicated to him his translation of the Iliad. Disappointed at the unfavorable reception of his last comedy, "The Way of the World" (1700), and worried by a contest with Jeremy Collier in regard to the morality of the English stage, he became disgusted and ceased to write plays. The munificence of Lord Halifax had placed him in easy circumstances. He had appointments in the public service worth £600 a year, and afterward he obtained the office of secretary for Jamaica, which raised his emoluments to £1,200. He wished to forget that he was an author; and when Voltaire waited upon him while he was in London, and took occasion to compliment his works, Congreve said that he would rather be considered a private gentleman than an author. "If you had been merely a gentleman," retorted Voltaire, "I should not have come to visit you." He was on intimate terms with the duchess of Marlborough, to whom he bequeathed the bulk of his fortune, amounting to about £10,000; and she dedicated a monument to him, and showed her regard for him in the most eccentric fashion. He was interred in Westminster abbey, the pall being borne by some of the most distinguished noblemen of England. Besides plays, his works comprise a romance and miscellaneous poems. A fine edition of his complete works, printed by Baskerville, appeared in Birmingham in 1761, and several others subsequently; the latest of these, edited by Leigh Hunt (London, 1849), gave occasion for Macaulay's essay on "The Comic Dramatists of the Restoration." His comedies have been translated into French and German.

CONGREVE, Sir **William,** an English engineer, born at Woolwich, May 20, 1772, died in Toulouse, May 15, 1828. In 1804, being then an artillery officer, he invented the rocket known by his name, which was used for the first time against Boulogne in 1806. He rose to the rank of general of artillery, succeeded his father as superintendent of the royal laboratory at Woolwich, and was member of parliament successively for Gatton and Plymouth. He wrote an "Elementary Treatise on the Mounting of Naval Ordnance" (1812), and a "Description of the Hydro-pneumatic Lock" for sluices and canals (1815). He invented improved processes of manufacturing gunpowder, amalgamating metals, and printing bank notes, and gave some attention toward a new mode of propelling ships. It is said that, foreseeing a war in the East, he submitted to the British government two plans, the one to defend, the other to reduce Constantinople, according as England might side with or against the Turks. Having become implicated in some questionable financial operations, he retired to the continent, where he remained till his death.

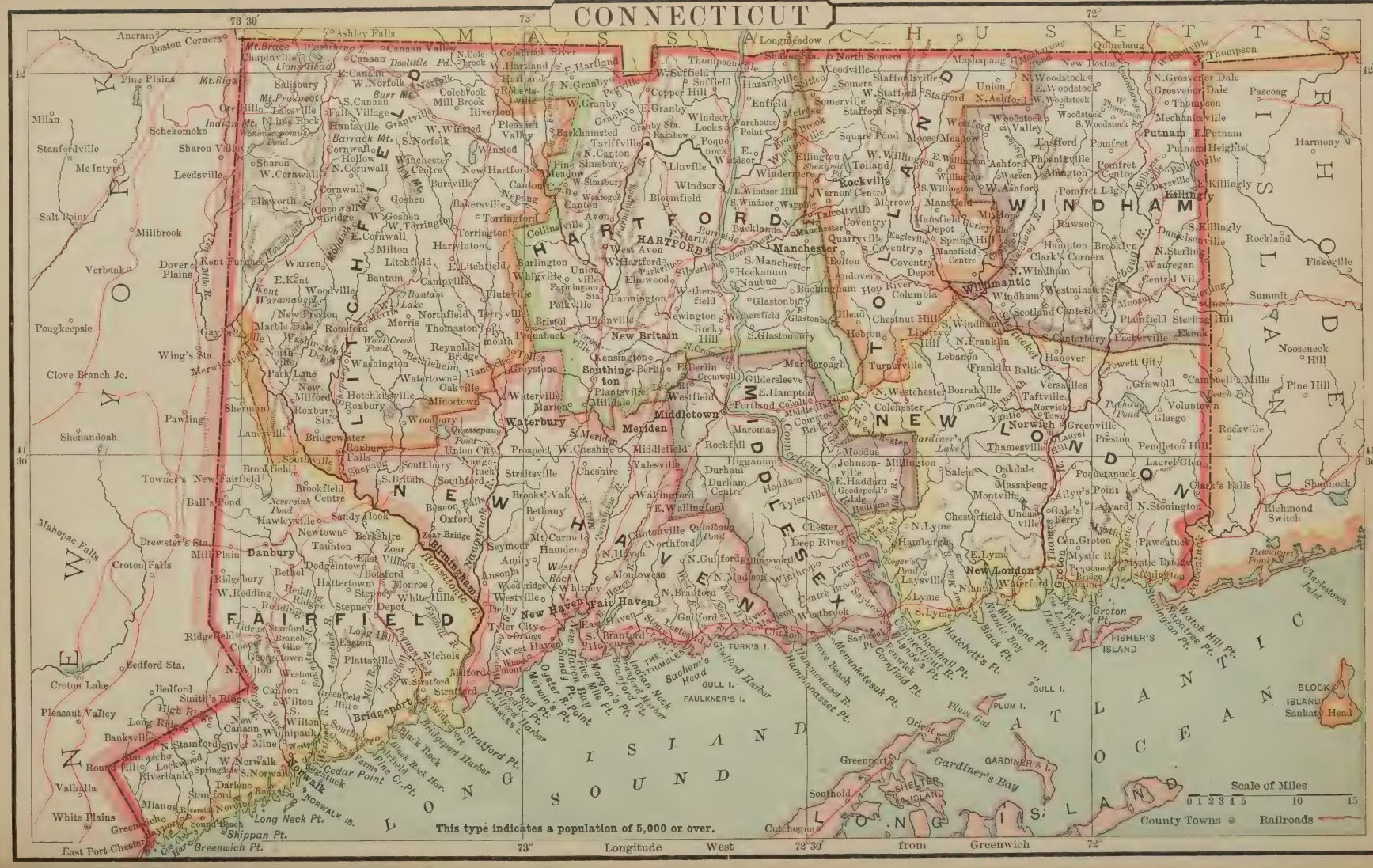
CONI, or **Cuneo. I.** A province of Italy, in Piedmont, bordering on France and the provinces of Turin, Alessandria, Genoa, and Porto Maurizio; area, 2,755 sq. m.; pop. in 1872, 616,817. About one half of the surface is level and the rest hilly and mountainous. The Ligurian and Maritime, and in the west the Cottian Alps, extend down into the province. It is traversed by the southern affluents of the Po, the most important of which is the Tanaro. Among the chief products are wheat, maize, mulberries, hemp, rice, and silk. In the mountains considerable cattle breeding and mining are carried on. The province is divided into the districts of Alba, Coni, Mondovi, and Sa-

luzzo. **II.** A city, capital of the province, situated 1,500 ft. above the sea, near the junction of the Gesso and Stura torrents, 46 m. S. of Turin, with which it is connected by railway; pop. in 1872, 22,882. Coni was originally a city of refuge. About the year 1100 Boniface, marquis of Savoy, conquered the region and established there the marquisate of Susa, but was not able to repress the outrages of the neighboring barons. The people soon rose against them, razed their strongholds, and built a town upon the site of the present city, which they called the "new city of Cuneo." In the 16th century the place was strongly fortified, and afterward underwent many sieges. In 1800, after the battle of Marengo, the French dismantled the fortress, and converted its site into promenades, and the town is now defended only by a wall. The cathedral is the ancient sanctuary of the "Madonna del Bosco," but has otherwise little interest. The church of San Francisco, belonging to a Capuchin convent, dates from the 12th century. There is also a handsome town hall, and other public buildings, and a pleasant public walk at the junction of the Gesso and Stura. There are considerable manufactures of silk and cotton, and the city is an agricultural mart for the surrounding region. About 10 m. S. W., in the the Val di Gesso, are the mineral baths of Valdieri, a place of much resort.

CONIC SECTIONS, the name given to the sections formed by cutting a right cone by a plane. The term is also constantly used to denote the curves formed by the intersection of the cutting plane with the surface of the cone. If the plane be parallel to the base of the cone, the section is a circle, or through the vertex a point. If the angle between the cutting plane and the plane of the base is less than the angle between the side of the cone and the base, the section is an ellipse, or through the vertex a point. If the angle between the cutting plane and the plane of the base is equal to that between the side of the cone and the base, the section is a parabola, or through the vertex a straight line. If the angle between the cutting plane and the plane of the base is greater than that between the side of the cone and the base, the section is a hyperbola, or through the vertex a triangle. If we suppose two similar cones to be so placed that they touch each other only at their vertices, and their axes form one straight line, then in the case of the hyperbola the cutting plane will cut both cones, giving two curves, which however are generally regarded as two branches of one curve. The properties of the conic sections were investigated with great thoroughness by the ancient Greek mathematicians of the school of Plato. Four books by Apollonius of Perga on conic sections have come down to us in the original Greek, and three more in Arabic translations. They are wonderfully full and accurate, and have left comparatively little for modern geometers to do in the investigation of the properties of these curves. Conic sections were in his day merely speculative theories; but after the lapse of 18 centuries it was discovered by Kepler that the orbits of the planets are ellipses, and from that time nearly all the most brilliant applications of mathematics to natural science and to the practical arts have been possible only through the use of conic sections. What was pure geometrical speculation among the Greeks, has proved of much practical advantage to us, the inheritors of their knowledge. The curves are now generally treated by the methods of analytical geometry. Every conic section may be represented by an equation of the second degree, and conversely every equation of the second degree may be represented by a conic section. One of the best purely geometrical treatises on the subject is the "Conic Sections" of Prof. Jackson of Union college; and the most elaborate and at the same time clear and practical analytical treatise is the "Conic Sections" of Prof. Salmon of Dublin.

CONINGTON, John, an English author, born at Fishtoft, near Boston, Aug. 10, 1825, died there, Oct. 25, 1869. He knew his letters when he was fourteen months old, and could read for his own amusement at three and a half years. Before he was six years old he was well acquainted with the historical parts of the Bible, and at eight he could repeat a considerable portion of the Æneid. In 1836 he was sent to the Beverley grammar school, where he remained two years, and at the age of 13 he entered the school at Rugby under Dr. Arnold. He was here distinguished for his remarkable memory and excellent scholarship, and after a course of five years was matriculated at Oxford in 1843. In 1847 he became a fellow of the university, and devoted himself chiefly to the study of the classics. He left Oxford in the following year, and established himself in London as a student of law. But he could not transfer his interest in the ancient poets to jurisprudence, and the experiment proved a failure. After six months' trial he returned to Oxford, and resumed his favorite pursuits. During his stay in London he formed a connection with the "Morning Chronicle," and for a time became a regular contributor to that journal. In 1857 he published an edition of the "Choephoræ" of Æschylus, having previously edited the "Agamemnon," with a translation into English verse which he afterward suppressed. He had also collected the materials for an edition of the "Supplices," which he was prevented from compiling by the plan for editing Virgil in conjunction with Mr. Goldwin Smith, and his subsequent appointment to the chair of Latin. The first volume of the edition of Virgil, containing the Eclogues and Georgics, was published in 1858, Mr. Smith having retired from the joint editorship. In 1863 he published a translation of the Odes of Horace, which was followed by the Æneid in 1866, by the last 12 books of the Iliad in 1868,

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Salem
Colchester
Lebanon
Hebron
Marlborough
Cromwell
Middletown
Portland
Durham
Middlefield
Meriden
Wallingford
Cheshire
Southington
Plymouth
Thomaston
Watertown
Oakville
Waterville
Naugatuck
Beacon Falls
Seymour
Ansonia
Derby
Shelton
Monroe
Newtown
Bethel
Danbury
New Milford
Sherman
Kent
Cornwall
Litchfield
Torrington
Winsted
Norfolk
Canaan
Salisbury
Lakeville
Falls Village
Sharon
Cornwall Bridge
Goshen
Harwinton
Bantam
Morris
Roxbury
Woodbury
Southbury
Oxford
Middlebury
Prospect
Wolcott
Bristol
Burlington
Canton
Simsbury
Granby
Suffield
Enfield

and by the satires, epistles, and *Ars Poetica* of Horace in 1869, the last appearing at the time of his death. In 1872 was published his edition of the satires of Persius, with a translation and commentary. The version of the Æneid is in the octosyllabic measure familiar to the readers of Scott and Byron, and has acquired considerable popularity. An edition of Conington's "Miscellaneous Writings," edited by J. A. Symonds, with a "Memoir" by H. G. S. Smith, has been published in two volumes (London, 1872).

CONIUM, a genus of umbelliferous plants, of which *C. maculatum*, the poisonous hemlock, is the best known species. This is an erect, branching, biennial plant, from 2 to 5 ft. high, with a tap-shaped root, smooth hollow stem, fern-like leaves, greenish white flowers, and globular crenellated fruit. The leaves when bruised emit a peculiar and disagreeable odor. It is a native of Europe, and now grows wild



Conium maculatum.

in the United States. It was used in medicine in the time of Dioscorides, and in all probability was the poison with which Socrates was put to death. Its activity depends upon a volatile alkaloid, conia, which is a poison of extreme energy. This alkaloid is contained in the leaves and seeds. The most efficient preparations of the drug are a fluid extract from the immature seeds and the *succus*. The latter is expressed from the green leaves and preserved by the addition of alcohol. The extract and tincture from the dried leaves are inert or nearly so. In medicinal doses the root is quite inert, and is not poisonous even when taken in quantities like a vegetable at an ordinary meal. The symptoms observed after a full dose (3 to 5½ drachms of the British succus for a healthy adult) are giddiness, indistinctness of vision, and a feeling of weakness and languor. When poisoning takes place, the weakness becomes actual paralysis, which may cause death, with or without convulsions, by involving the respiratory muscles, the intelligence and sensibility being unaffected. The symptoms resemble those produced by woorara, the South American arrow poison, and are probably due to a similar condition, a paralysis of the motor nerves, especially of their terminations, the nervous centres being unaffected. Conium may be used in diseases characterized by excessive or irregular motor activity, such as convulsions from teething, chorea, shaking paralysis, whooping cough, and general nervous irritability. It seems also in some cases to have a decided effect in relieving pain. Observation has shown the notion that it will retard the progress of cancer to be unfounded. The alkaloid, conia, is rarely used in medicine. The dose of the fluid extract is 8 or 10 drops three times a day, increased to half a teaspoonful or more if necessary. The succus of the British Pharmacopœia may be given in similar doses.

CONKLING, Roscoe. See supplement.

CONNAUGHT, the westernmost of the four provinces of Ireland, comprising the counties Galway, Mayo, Roscommon, Leitrim, and Sligo; area, 6,614 sq. m.; pop. in 1841, 1,418,859; in 1851, 1,012,006; in 1861, 913,135; in 1871, 845,993, of whom 803,532 were Roman Catholics. It is extremely rugged and mountainous except in the central part, and abounds in magnificent scenery, but the soil is the most barren in Ireland. A great part of the land consists of bog. It is drained by the Shannon and its affluents, and by numerous rivers of less note, which mostly take their rise from lakes and flow into the ocean. The coast is broken by many bays and inlets. The population is almost entirely of Celtic race, and the Irish language is still extensively spoken. The moral and physical condition of the people is lower than in the other provinces; abject poverty prevails, and the population is steadily decreasing. Galway, Sligo, and Ballina, all seaports, are the chief towns.—Connaught was divided into counties by Queen Elizabeth in 1590.

CONNEAUT, a village and township on Conneaut creek, Ashtabula co., Ohio, 2 m. from Lake Erie, and near the border of Pennsylvania; pop. of the township in 1870, 3,010; of the village, 1,163. It is memorable as the landing place of the first settlers of northern Ohio in 1796, whence it is sometimes called the Plymouth of the Western Reserve. It has a good harbor, with a lighthouse, contains a number of churches, schools, &c., and is the centre of an active commerce. The surrounding country is extremely productive. The Lake Shore railroad passes through the village.

CONNECTICUT, one of the thirteen original states of the American Union, and the smallest of the present states in area except Rhode Island and Delaware. It derives its name from its chief river, the Connecticut, meaning in the original Indian language the Long river. It is bounded N. by Massachusetts, E. by Rhode Island, S. by Long Island sound, and W. by

New York. The northern line, as originally run, measured 88 m., viz., 41 m. E. of Connecticut river, and 47 m. W.; the eastern line, 45 m.; the western line, 72 m. by the indirect course near the southern extremity, or 68 in a direct line. The average length of the state is 86 m., and the average breadth 55 m. Its area is 4,750 sq. m. It lies between lat. 41° and 42° 3′ N., and lon. 71° 55′ and 73° 50′ W. The state contains 8 counties and 166 towns. Of the former, Hartford, New Haven, New London, and Fairfield were incorporated in 1666, Windham in 1726, Litchfield in 1751, Middlesex and Tolland in 1785. Four counties border on Massachusetts and four on Long Island sound. The cities are: New Haven, pop. in 1870, 50,840; Hartford, 37,180; Bridgeport, 18,969; Norwich, 16,653; Waterbury, 10,826; New London, 9,576; and Middletown, 6,923. Connecticut until 1873 had two capitals, Hartford and New Haven, the legislature meeting alternately at each; but in that year it was



State Seal of Connecticut.

after much discussion decided that Hartford should be the capital. Many of the boroughs and villages of the state are extensively engaged in manufactures and commerce. The chief of these are New Britain, Danbury, Willimantic, Clinton, Sharon, Meriden, Collinsville, Bristol, Salisbury, Naugatuck, Norfolk, Greenville, and Windsor Locks. Stamford, Norwalk, Guilford, and Stonington have considerable coasting trade.—The population of Connecticut in 1679 was 12,535; in 1756, 131,805; in 1762, 145,666; in 1774, 197,856; in 1782, 208,870. At subsequent decennial periods the population and the comparative rank of the state in the Union have been as follows:

YEARS.	White.	Free colored.	Slave.	Total.	Rank.
1790.....	232,374	2,808	2,764	237,946	8
1800.....	244,721	5,330	951	251,002	8
1810.....	255,179	6,453	310	261,942	9
1820.....	267,181	7,870	97	275,148	14
1830.....	289,603	8,047	25	297,675	16
1840.....	301,856	8,105	17	309 978	20
1850.....	363,099	7,693	..	370,792	21
1860.....	451,520	8,627	..	460,147	24
1870.....	527,509	9,668	..	537,454	25

Of the total population in 1870, 265,270 were males and 272,184 females; 423,815 were native born, of whom 344,254 were born in the state, and 113,639 foreign born. Of the foreigners, 10,861 were born in British America, 13,001 in England, 70,630 in Ireland, 3,238 in Scotland, 12,443 in Germany, and 820 in France. The density of population was 113·15 to a square mile. There were 114,981 families with an average of 4·67 persons to each, and 96,880 dwellings with an average of 5·55 persons to each. The increase of population from 1860 to 1870 was 16·8 per cent. The number of male citizens 21 years old and upward was 127,499. There were in the state 125,409 persons between the ages of 4 and 16 years; the total number attending school was 99,663; 19,680, 10 years old and upward, were unable to read, and 29,616 could not write. Of the latter 5,678 were of native and 23,938 of foreign birth; 12,374 were males and 17,244 females; 27,941 were white and 1,675 colored; 2,661 were from 10 to 15 years old, 2,923 from 15 to 21, and 24,004 were 21 and over, of whom 8,990 were white males, 13,683 white females, 627 colored males, and 704 colored females. There were 4 adults unable to write to every 100 inhabitants. The number of paupers supported during the year ending June 30, 1870, was 1,728, at a cost of $189,918. Of the total number (1,705) receiving support June 1, 1870, 1,237 were natives and 468 foreigners. The number of persons convicted of crime during the year was 450. Of the total number (430) in prison June 1, 1870, 278 were of native and 152 of foreign birth. The state contained 252 blind, 475 deaf and dumb, 772 insane, and 341 idiotic. Of the total population 10 years of age and over (425,896) there were engaged in all occupations 193,421 persons, of whom 159,460 were males and 33,961 females; in agriculture, 43,653, including 18,934 agricultural laborers, 23,704 farmers and planters, and 865 gardeners and nurserymen; in professional and personal services, 38,704, of whom 908 were clergymen, 15,104 domestic servants, 13,017 laborers (not specified), 391 lawyers, 680 physicians and surgeons, and 2,711 teachers (not specified); in trade and transportation, 24,720; in manufactures, mechanical and mining industries, 86,344, including 2,698 blacksmiths, 2,540 shoemakers, 7,130 carpenters and joiners, 9,057 cotton-mill operatives, 3,148 machinists, 4,515 mill and factory operatives (not specified), 1,279 sewing-machine factory operatives, and 4,499 woollen-mill operatives. According to the report of the state librarian to the general assembly, there were registered during the year ending Jan. 1, 1871, 13,136 births, an increase of 655 over the number registered in any previous year; ratio of births to the population 1 in 40·9. There were 105 illegitimate, 1 to each 125·1 births, and 141 plurality births. The number of marriages was 4,871, an increase of 117 over the previous year, the ratio being 1 in every 55·2 of the

population. The number of deaths was 8,895, or 1 to every 60·5 of population; ratio of males to females, 109·9 to 100. Of the total number of deaths, 2,012 resulted from zymotic diseases, 1,088 from diseases of the nervous organs, 1,913 of the respirative, 322 of the circulative, and 389 of the digestive.—The face of the country is diversified by hills and valleys, which intersect the state from N. to S. and present beautiful and constantly varying scenery. The surface is rugged; the several ranges of mountains, or rather hills, which traverse the state, are continuations of those found in the states lying northward. The most westerly of these ranges is the Housatonic, which is rather a succession of hills than a continuous range. The Green mountain range, extending from Vermont and Massachusetts, terminates 2 m. N. W. of New Haven. Between this range and the Connecticut river is the Mt. Tom range, terminating at East Rock, a short distance N. E. of New Haven. The Blue hills of Southington, a part of this range, are 1,000 ft. high, and are said to be the most elevated land in the state. A fourth range on the E. side of the Connecticut terminates at East Haven. Three extensive valleys extend N. and S. across the state, viz.: the Housatonic in the west, the Connecticut in the centre, and the Quinebaug in the east, all of which contain much fine agricultural land. The valley of the Connecticut varies in width from 10 to 16 m.—Connecticut has about 100 m. of seacoast on Long Island sound, from the mouth of the Pawcatuck river on the southeast to the mouth of the Byram on the southwest. The sound is 140 m. long and 24 m. wide in its broadest part, and is navigable by the largest ships. The coast is indented by numerous bays which afford excellent harbors, the chief of which are at New London, New Haven, Stonington, Bridgeport, and Saybrook. The first named, capacious, deep, and not liable to be frozen over in winter, is one of the finest harbors in the country. There are other convenient harbors at Mystic, Niantic, Clinton, Guilford, Sachem's Head, Branford, Milford, Black Rock, Southport, Saugatuck, Norwalk, Stamford, and Greenwich.—Most of the state is drained by three principal rivers, with their branches: the Connecticut in the central, the Housatonic in the western, and the Thames in the eastern part. Besides these, there are various small streams of limited extent, which flow into Long Island sound. Of these the Quinepiack, which rises between Farmington and New Britain and empties into New Haven harbor, is the largest, and the only one which extends half across the state. The Connecticut, the longest river in New England, has a southerly course as far as Middletown, where turning abruptly it flows S. E. to its mouth at Saybrook on Long Island sound. With its branches it drains the central part of the state, including all of Hartford co. except Southington and the S. E. part of Farmington, all of Middlesex co. except Killingworth, the western part of Tolland and the N. E. part of Litchfield co. Vessels drawing 8 ft. of water can ascend to Hartford, 50 m. from the mouth. The only considerable tributary of the Connecticut in the state is the Farmington or Tunxis river. This stream has a singular course. Rising in the highlands of Berkshire, Mass., it runs S. E. to the centre of Farmington, then turns N. in a sluggish stream with little fall 15 m. to Tariffville, where it turns S. E., breaks through the trap mountains, and flows into the Connecticut at Windsor. The natural outlet of this river is New Haven harbor; and at a trifling expense the stream might be turned into the Quinepiack river, as a considerable part of its waters were carried to New Haven by the Farmington canal. The E. part of the state is watered by the Thames and its affluents. Its head waters rise in Massachusetts, and its basin embraces all of Windham, most of Tolland, and nearly the whole of New London counties. It takes the name of the Thames at the junction of the Yantic with the Quinebaug at Norwich, to which place or to Allyn's Point it is navigable for steamboats and small vessels; and from its mouth to New London it forms the best harbor in the state. In the view of the first settlers, the locality corresponded so well with London in facilities for commerce, that they named the river the Thames and the place New London, looking to a future city, which was in fact the first incorporated in the state. Above Norwich the waters of the Thames take different names. The Shetucket unites with the Quinebaug in the upper part of that town, and the two streams which unite and form the Shetucket are the Willimantic and Hop rivers. Corresponding with the Thames in the eastern is the Housatonic in the western part of the state, which with its main branch, the Naugatuck, and their branches, waters all of Litchfield co. except the N. E. towns, the W. half of New Haven co., and the N. and E. part of Fairfield co. The Housatonic is navigable for small vessels to its junction with the Naugatuck at Derby. The whole northern and the larger part of the state is wholly drained by the three large rivers above mentioned. Numerous small streams fall directly into Long Island sound, the largest into New Haven harbor. Some of these afford water power for manufacturing purposes; and the broad mouths of most of them form numerous harbors along the coast. Considering the general course of the mountainous ranges through the state, bearing to the W. of S., there is something peculiar in the S. E. bearing of the principal streams. There is a marked correspondence in the courses of the Housatonic from New Milford to Derby, the Farmington from its entrance into the state to Farmington, and the Willimantic and Shetucket to their entrance into the Thames, and especially the Connecticut from Middletown into the sound, through an unnatural bed of primitive formation.—Several ranges of trap rock pass through the central valley of Con-

necticut, sometimes continuous, and sometimes in broken elevations, with mural fronts on their western sides, and gentle declivities on the eastern. In some instances small elevations of trap rock are found, which have broken through the granitic rocks, at short distances E. and W. of this secondary valley. They are arranged in dikes and ridges, mostly in one general range, with collateral branches, running centrally through the secondary formation, dividing it into two portions. The eastern commences at New Haven, passes easterly of East rock to Middletown, and thence follows the Connecticut river into Massachusetts. The western portion runs from New Haven through Farmington, to Northampton. This secondary region, with its borders, embraces valuable mineral resources. The rocks on the E. and W. borders, and underlying the trap, are the red sandstone, or freestone, so useful for building purposes; immense quantities of it are quarried at Portland, on the Connecticut, and shipped to New York. In Bolton, near the E. border of this section, is the celebrated quarry of Bolton stone, a micaceous slate, which splits smoothly and beautifully in thin strata, and is extensively used for flagging and other purposes. Copper is found in various parts of the trap range. The Simsbury mines, in the present town of Granby, which was once a part of Simsbury, were worked early in the history of the colony, and were rendered famous by being converted into a state prison, the first in the state. The Bristol copper mines are in the N. E. borders of Bristol, a short distance W. of the secondary section, and within two miles of the railroad. Lead mines, with a large percentage of silver, have at various times been worked in Middletown, especially during the revolutionary war, but as yet to little profit. Veins of sulphate of barytes (heavy spar) are found in the E. parts of Cheshire and Southington, and large quantities are quarried and used in the composition of paints. Between the trap ridges on the borders of Southington and Berlin is found hydraulic lime, from which are manufactured large quantities of water cement. There is a cobalt mine in Chatham. The country watered by the Thames and its tributaries is granitic and metamorphic in gentle swelling hills, capable of cultivation to their summits. The quarries and mines of the Housatonic valley form valuable sources of wealth. Extensive beds of hematite iron ore are found, especially in Salisbury and Kent; and the heavy iron works at the former place have long been celebrated. The valleys of the Housatonic and branches, especially N. of New Milford, contain immense beds of limestone of the best quality, for ornamental and useful purposes, for buildings and monuments, and for burnt lime. The mountains furnish cheap fuel for burning, and the quarries of limestone are easily worked. The quarries of New Preston in Washington furnish large blocks of pure white marble, of fine grain and firm texture, which is suitable for buildings, monuments, and ornamental purposes. The whole seacoast, except across New Haven harbor, is of primitive formation, and difficult of cultivation. Much of it is suitable for grazing, but it is the most valuable for the production of fruit and vegetables. Granite in great variety, with gneiss and mica slate, is extensively quarried for use as building materials, flagging, &c. The quarries in Haddam on the Connecticut, and in other places, are extensively worked. The mineral resources of the state have been but partially developed. Slate for tiling prevails, but to what extent or excellence is not yet well tested. A beautiful marble, some portions resembling the verd antique, is found in Milford and North Milford. Clay for the manufacture of bricks and pottery abounds, especially in the secondary region; and bricks are extensively manufactured through the valleys, and pottery in Hartford and vicinity. Materials for the manufacture of porcelain and crockery have been discovered. Fire-brick furnaces and crucibles are extensively manufactured in New Milford. The feldspar quarry of Middletown furnishes a pure material for porcelain ware. Mineral chalybeate springs, some of them slightly sulphurous, are found in various parts of the state, but the only one of note is in Stafford, which formerly was much resorted to.—The climate, though changeable, is remarkably mild and healthful. The seasons are more uniform than in the northern parts of New England, the temperature in winter and summer being less extreme. Observations covering a period of 20 years show the mean temperature in winter to be 29·92°, spring 46·41°, summer 69·27°, and autumn 52·86°; whole year, 49·62°; highest mean for any month, 75·80°; lowest, 19·97°; range, 55·83°. In 1870 the lowest temperature was 7° below zero in January; highest, 97° in July. The fall of rain and snow during the winter was 15·60 inches; spring, 12·26; summer, 9·54; autumn, 10·21. According to the mortality statistics of 1870, the chief diseases were consumption, which was the cause of 15·65 per cent. of the total deaths; cholera infantum, 7·46 per cent.; pneumonia, 6·29; typhus fever, 5·49; scarlatina, 3·22; and apoplexy, 2·25.—The soil is generally good; while much of it is fitted for cereal agriculture, the greater part is better adapted to grass growing. In the alluvial bottom lands exists a rich loam, seldom equalled for continuous tillage and productiveness, while much of the land in the valleys is composed of a diluvial, light sandy or gravelly soil, unproductive unless artificially fertilized. The mountain and hill sides afford excellent pasturage, and many portions of the state are noted for their dairy products. The mountainous regions, unfit for cultivation, furnish wood and timber for domestic uses, and for buildings and ships. A great variety of trees abound in the forests, the most common of which are oak, chestnut, walnut, butternut,

birch, beech, ash, elm, maple, poplar, basswood, whitewood, and cedar. Most of the hardy fruit trees adapted to the climate grow naturally, and are easily and profitably cultivated: the apple and pear in great varieties and perfection, the cherry, plum, quince, and formerly the peach; also, berry-bearing shrubs and plants, as the strawberry, raspberry, blackberry, whortleberry, barberry, cranberry, currant, gooseberry, &c. Most of these grow wild, but some of them are much improved by cultivation. The strawberry is an important article of production for the market, and grapes are cultivated. On the rich alluvial bottoms and highly manured uplands tobacco is extensively raised. Garden seeds are largely produced, especially in Wethersfield, and by the Shakers at Enfield. Hay is one of the most important crops of the state. From the nature of the soil and face of the country, meadows and pastures must ever be numerous and extensive. Away from the interval lands, the dairy and beef cattle are the most profitable for the farmer. According to the census of 1870, there were in the state 25,508 farms; the number of acres of improved land in the state was 1,646,752; unimproved, 2,224,085, of which 577,333 were woodland; value of farms, $124,241,382; of farming implements and machinery, $3,246,599; total amount of wages paid during the year, including value of board, $4,405,064. There were 34,935 horses, 190 mules and asses, 98,889 milch cows, 39,639 working oxen, 79,485 other cattle, 83,884 sheep, and 51,983 swine; value of all live stock, $17,545,038. The productions were 2,085 bushels of spring and 36,059 of winter wheat, 289,057 of rye, 1,570,364 of Indian corn, 1,114,595 of oats, 26,458 of barley, 148,155 of buckwheat, 13,038 of peas and beans, 2,789,894 of Irish and 867 of sweet potatoes, 8,328,798 lbs. of tobacco, and 254,129 of wool. The orchard products were valued at $535,954, and the produce of market gardens at $599,718; 27,414 gallons of wine were made, 6,716,007 lbs. of butter, 2,031,194 of cheese, and 6,253,259 gallons of milk were sold. Other products were: 563,328 tons of hay, 1,725 bushels of clover and 4,471 of grass seed, 1,004 lbs. of hops, 14,266 of maple sugar, 6,832 gallons of sorghum molasses, 1,326 lbs. of wax, and 32,158 of honey. The value of forest products was $1,224,107; of home manufactures, $53,297; of animals slaughtered or sold for slaughter, $4,881,858; total estimated value of all farm productions, including betterments and additions to stock, $26,482,150. During the past few years much attention has been given in Connecticut to pisciculture, and laws have been passed for the protection and restoration of the fishes in the various waters of the state. The design is to introduce into the state new varieties of well known and marketable fish, and also to supply a greater abundance of the best varieties existing there. Under the supervision of the commissioners of fisheries, the principal ponds and many of the rivers have been stocked with fish, chiefly black bass, shad, and salmon from Maine and Canada. The first experiment in the artificial propagation of shad in the Connecticut river was made a short distance below Holyoke dam, in July, 1867, when about 40,000,000 of young shad were put into the river. Since that date the commissioners have continued their efforts with success.—The manufactures of the state are more general, multifarious, and productive than those of any other people of similar means. The abundant water power furnished by the rivers of the state contributes largely to this result. Nearly all the inhabitants are directly or indirectly interested in some kind of manufactures. Much of the machinery used is the fruit of inventions and improvements by the manufacturers themselves, among whom may be mentioned the names of Whitney, Goodyear, and Colt. The ingenuity and inventive talent of the people of Connecticut have ever been remarkable. In 1872 the proportion of patents granted by the United States to the number of inhabitants was greater in Connecticut than in any other state, being one to each 829 inhabitants. According to the census of 1870, Connecticut ranked first among the states in the production of clocks, India-rubber and elastic goods, and hardware; next to New York in the production of sewing machines, and to New Jersey in silk goods; next to Massachusetts and Rhode Island in woollen goods, New York and New Jersey in hats and caps, and New York and Massachusetts in edge tools and axes; fifth in the production of cotton goods, and eighth in the total value of all products. Connecticut has almost monopolized the manufacture of clocks for the United States and for a large part of the civilized world. Of the total value ($2,509,643) of all the clocks made in the United States in 1870, $2,245,043 were made in Connecticut. Nearly half of all the India-rubber goods and more than half of all the hardware manufactured in the United States in 1870 were the product of Connecticut industry. In the manufacture of carriages Connecticut is also noted. The other most extensive manufactures are those of agricultural and mechanical implements, hats, leather, boots and shoes, paper, saddlery, cabinet furniture, combs, buttons, wooden ware, powder, glass, soap and candles, friction matches, silver and plated ware, jewelry, and distilled spirits. The total number of manufacturing establishments reported by the census was 5,128, using 711 steam engines of 25,979 horse power, and 1,988 water wheels of 54,395 horse power, and employing 89,523 hands, of whom 61,684 were males above 16, 20,810 females above 15, and 7,029 youth. The total amount of capital employed was $95,281,278; wages paid, $38,987,187; value of materials used, $86,419,579; of products, $161,065,474. The chief industries are shown by the following table:

INDUSTRIES.	Number of establishments.	Steam engines, horse power.	Water wheels, horse power.	Hands employed.	Capital.	Wages.	Materials.	Products.
Bleaching and dyeing	18	13	258	188	$150,100	$81,352	$2,541,985	$2,849,743
Boots and shoes	281	19	30	2,417	585,800	640,774	1,225,048	2,319,596
Brass ware	12	316	327	416	785,000	244,300	694,630	1,331,013
Carpentering and building	430	169	70	2,156	685,000	1,103,145	2,040,500	4,015,351
Carpets, other than rag	3	800	....	1,185	1,530,000	432,031	1,807,397	2,027,136
Carriages and wagons	205	185	401	2,341	2,292,810	1,402,034	1,798,299	4,164,480
Clocks	10	447	275	1,204	759,000	736,000	718,518	2,245,043
Clothing	189	111	6	3,112	1,166,675	1,053,784	2,519,559	4,120,190
Cotton goods	79	585	9,405	10,849	10,973,900	2,870,434	7,741,551	12,805,101
" thread, twine, and yarn	32	275	1,435	1,237	1,736,800	376,349	1,077,100	1,721,233
Cutlery and edge tools	41	376	1,046	1,788	1,306,555	912,563	607,217	2,099,895
Edge tools and axes	7	125	917	590	911,675	361,110	534,385	959,911
Firearms, small arms	8	654	224	1,607	1,793,770	1,100,668	815,247	2,222,873
Flouring and grist-mill products	276	420	6,251	562	1,165,358	128,353	3,852,964	3,966,328
Hardware	145	2,640	1,773	7,246	6,863,395	3,549,840	5,122,759	12,111,084
Hats and caps	33	534	56	2,464	1,153,300	1,018,108	1,894,647	3,740,871
India-rubber and elastic goods	13	1,183	981	1,946	2,345,000	761,434	2,855,488	4,239,329
Iron castings	81	1,380	559	2,348	2,866,650	1,368,345	1,682,535	3,986,544
Machinery	77	1,011	635	1,758	2,542,441	1,160,000	969,963	3,324,847
Paper, printing	18	135	1,157	437	854,100	206,986	932,230	1,467,489
" writing	6	386	1,450	616	1,046,346	315,348	1,637,929	2,158,511
Plated ware	32	685	499	2,107	2,337,500	1,201,552	2,005,090	4,066,806
Sewing machines	6	585	30	2,300	2,350,000	1,640,246	1,200,335	3,619,000
Silk goods	20	362	300	1,576	1,355,130	536,380	1,921,509	3,138,620
Woollen goods	103	2,258	6,110	7,285	12,490,400	2,860,120	11,016,925	17,365,148

—The extensive seacoast and various harbors, together with the enterprising and hardy character of the men, are favorable to commerce and navigation. Besides the coasting trade, which is extensive, especially with New York, Connecticut is largely interested in foreign commerce. There are in the state five customs districts, of which the ports of entry are Fairfield, Middletown, New Haven, New London, and Stonington. The imports from foreign countries and domestic exports for the year ending June 30, 1872, were as follows:

PORTS.	Imports.	Exports.
Fairfield	$18,798	$4,490
Middletown	814	.....
New Haven	843,227	321,359
New London	255,352	106,711
Stonington	82,108	.....
Total	$1,200,299	$433,160

The principal articles of export were flour, manufactures of wood, provisions, and carriages. The vessels entering from and clearing for foreign countries, together with the vessels registered, enrolled, and licensed at the different ports, were as follows:

PORTS.	ENTERED.		CLEARED.		REGISTER'D, &c.	
	No.	Tons.	No.	Tons.	No.	Tons.
Fairfield	39	5,509	34	4,580	163	11,296
Middletown	1	201	..	....	151	18,694
New Haven	117	24,681	97	16,489	155	17,600
New London	28	4,616	25	3,878	197	20,878
Stonington	13	2,873	8	870	115	15,290
Totals	198	37,880	164	25,817	781	83,760

Besides these, 1,055 vessels of 584,715 tons engaged in the coasting trade and fisheries entered, and 498 of 553,361 tons cleared. Of the total number enrolled, registered, and licensed, 696 were sailing vessels, with a total tonnage of 55,339, and 68 were steam vessels, tonnage 25,047. Ship building is an important item of industry. During the year there were built in the state 26 sailing vessels, tonnage 1,550, and 10 steam vessels, tonnage 373. The fisheries of the state are carried on chiefly from Stonington and New London. In 1872, 69 vessels with a tonnage of 1,473 from the former place were engaged in the cod and mackerel fishery; from the latter, 100 vessels, tonnage 2,918, were engaged in the cod and mackerel fishery, and 19 vessels of 3,113 tons in the whale fishery. According to the census of 1870, 1,001 persons were engaged in fisheries, and the products for that year amounted to $769,799.—Connecticut has one mile of railroad to every 5·38 square miles of area, and to every 620 inhabitants. According to the report of the general railroad commissioners of the state made in May, 1873, there were 22 railroad companies, representing 1,268 m. of railroad wholly or partly in the state, of which 10 were dividend-paying. The total number of miles in operation was 1,163, of which 868 were in Connecticut. The aggregate chartered capital of these companies amounted to $44,344,550; amount of funded and floating debts, $43,273,492; cost of road and equipments, $74,074,037. Up to May 1, 1873, $35,460,117 of the capital had been paid in, of which 44 per cent. was held by 4,005 stockholders resident in Connecticut. The gross earnings of all the companies during the year amounted to $11,368,425, of which about 50 per cent. was from passengers. The net income was $3,169,902, of which $2,271,143 was paid in dividends, being 7·9 per cent. on the paid-in capital of the companies paying dividends. There were 10,134,633 passengers transported during the year. The railroads lying wholly or partly in the state were as follows:

RAILROADS.	TERMINI.	Capit'l stock.	Cost of road and equip. ment.	Commenced operations.	Length of road.	Length in operation in Conn.
New York, New Haven, and Hartford..	New York city and New Haven..	$15,500,000	$14,702,445 97	1838	140	120
Hartford, Providence, and Fishkill.....	Waterbury and Providence, R. I..	4,000,000	4,800,361 39	1842	112	96
New Haven and Northampton.....	N. Haven and Northampton, Mass.	2,100,000	3,427,057 01	1848	109	60
Norwich and Worcester.....	Norwich and Worcester, "	2,825,000	2,613,694 21	1840	66	49
New London Northern.....	N. Lond'n and Grouts' Corner, "	1,418,800	1,533,933 78	1849	100	56
Housatonic.....	Bridgeport and Pittsfield, "	2,000,000	2,205,558 52	1842	74	74
Naugatuck.....	Bridgeport and Winsted, "	2,000,000	2,041,451 77	1849	61	61
New York, Providence, and Boston.....	New London and Providence, R.I.	2,000,000	2,222,363 30	1839	62	17
Shore Line.....	New Haven and New London.....	1,000,000	1,200,000 00	1852	50	50
Boston, Hartford, and Erie.....	Fishkill, N. Y., and Boston, Mass.	.....	22,500,000 00	1867	139	42
Connecticut Valley.....	Hartford and Saybrook.....	1,500,000	2,649,764 28	1871	45	45
Connecticut Western.....	Hartford and Millerton, N. Y.....	3,000,000	4,092,986 52	1871	67	67
Danbury and Norwalk.....	South Norwalk and Danbury.....	600,000	1,253,733 52	1852	34	34
New Haven and Derby.....	New Haven and Derby.....	455,700	1,130,460 00	1871	13	13
New Haven, Middletown, and Willimantic	New Haven and Willimantic.....	3,000,000	5,461,959 31	1870	52	22
Shepaug Valley.....	Litchfield and Hawleyville.....	1,000,000	819,708 76	1871	32	32
New Canaan.....	Stamford and New Canaan.....	164,050	257,089 63	1868	8	8
Watertown and Waterbury.....	Watertown and Waterbury.....	130,000	135,000 00	1870	4	4
Rockville.....	Vernon and Rockville.....	100,000	173,105 65	1863	5	5
South Manchester.....	Manchester and South Manchester	40,000	67,000 00	1869	2	2
New York, Housatonic, and Northern..	Brookfield and White Plains, N.Y.	261,000	616,363 78	1868	60	5
Ridgefield and New York.....	Ridgefield and Port Chester, "	1,250,000	170,000 00	....	23	..
Total.....	.....	$44,344,550	$74,074,037 40		1,268	868

The directors of every railroad company are required to make an annual report, under oath, of the condition, receipts, and expenditures of their respective roads, to the railroad commissioners, who in turn report to the general assembly. All companies incorporated since 1850 are required by law to erect fences on both sides of their tracks throughout the whole extent, except at places where the commissioners may deem fences unnecessary; also to furnish all passenger trains with connecting aprons between the platforms of the cars as a protection to passengers from accidents. The liability of companies for the loss of life of a passenger through negligence of the company is limited to $5,000.—In 1871 there were 66 savings banks, with an aggregate deposit of $55,297,705 40, an increase during the year of $7,392,871; whole number of depositors, 177,887; average amount due each depositor, $310; average amount of deposit to each person in the state, $90 40; amount of state tax paid, $351,897; United States tax, $105,164; market value of total assets, $58,619,779. In January, 1873, the number of savings banks had increased to 78, with assets amounting to $71,271,395, and deposits to $68,523,397, of which $21,864,553 had been received during 1872, while $16,058,992 had been withdrawn during the same period. The state contained 4 state banks, with an aggregate capital of $1,450,000, and a circulation of $31,406; 8 chartered trust companies and 3 organized under the joint stock law, with an aggregate capital of $2,263,890, and deposits amounting to $2,869,406; and 81 national banks, with an aggregate capital of $25,656,820, and circulation issued to the amount of $20,443,410. The whole number of fire insurance companies doing business in the state in 1873 was 98, of which 27 were Connecticut companies, 63 incorporated by other states, and 8 foreign companies. The Connecticut companies employ 564 agents in the state, and the other companies 802. The gross premium receipts on risks written in Connecticut in 1872 amounted to $1,682,449, and the losses to $535,433, making an average ratio in favor of the receipts of over three to one. The total of risks written in the state during 1872 amounted to $147,717,429. In 1873 there were 34 life and casualty insurance companies authorized to transact business in the state, with gross assets amounting to $254,392,070.—The constitution of Connecticut was adopted in 1818, but has since been amended. It provides that the legislative, executive, and judicial powers shall be kept distinct. The legislature shall consist of a senate and house of representatives, called the general assembly, and meet on the first Monday of May. The governor may call extra sessions. The house of representatives consists of two members from each town incorporated before 1785, whatever its size; and with few exceptions, each town incorporated since is entitled to only one. The present number of representatives is 237. The senate consists of not less than 18 and not more than 24 members, elected by districts which consist of counties or divisions of counties, the number and extent to be determined by the general assembly after each decennial United States census. The present number of districts and senators is 21. Senators and representatives are elected annually by a plurality vote; there is no limitation as to age. The members receive $3 a day for not more than 45 days of actual session, and 10 cents per mile for travel. The speaker of the house receives $5 a day. The governor, lieutenant governor, secretary of state, treasurer, and comptroller are chosen annually. The governor must be 30 years of age. A majority of all the votes is required for a choice; and if no choice is made by the people, the two houses of the general assembly in convention make a choice from the two having the high-

est number of votes. The salary of the governor is $2,000; lieutenant governor, *ex officio* president of the senate, $500; treasurer, $1,200; secretary of state and comptroller, $1,000 each. Connecticut has no attorney general or state law officer. The commissioner of the school fund and the state librarian are appointed by the legislature; the salary of the former is $2,000 and expenses, and of the latter $1,600. The secretary of the board of education is appointed by the board, and receives a salary of $3,000 and expenses. A majority vote in each house is sufficient to pass a bill over the governor's veto. The pardoning power is vested in the general assembly; the governor can only grant a temporary reprieve. The judicial power is vested in a supreme court of errors, superior court, courts of common pleas for certain counties, probate court, inferior courts for certain cities and boroughs, and justices of the peace. The supreme court of errors consists of a chief justice and four associates, who are also judges of the superior court. This court has general appellate jurisdiction, civil and criminal, in matters of law and equity brought before it by writ of error or appeal from the judgments and decisions of the superior court. The superior court consists of six judges, exclusive of those who are judges of the supreme court. It has general original jurisdiction, civil, criminal, and equitable, and hears appeals from inferior courts. In all trials for crime punishable by death, the court must consist of at least two judges, one of whom must be a judge of the supreme court. The judges of the supreme and superior courts are elected by concurrent vote of the senate and house of representatives for a term of eight years, but are disqualified by the constitution when 70 years of age; the salary of each is $3,500. They may be removed by impeachment or by the governor on address of two thirds of each house. There are four courts of common pleas, respectively for the counties of Hartford, New Haven, Fairfield, and New London. These courts have civil jurisdiction in law and equity in cases where the amount in controversy does not exceed $500, and in cases not criminal hear appeals and writs of error from justices of the peace. Each court of common pleas consists of one judge, who is elected annually by the general assembly, and receives a salary of $2,500. Probate courts are held in each district, of which there are more than 100 in the state, most of them embracing single towns. The judges are chosen annually by the people. Justices of the peace are chosen biennially by the people of the towns in which they reside. The state militia consists of four regiments and a company of light artillery, comprising a total of 149 officers and 2,234 enlisted men. All elections are by ballot. The annual election is held on the first Monday of April, and in May following, when the legislature meets, the officers chosen enter upon their duties. By the laws of the state every white male citizen of the United States, having attained the age of 21 years, and resided one year in the state and six months in the town where he offers to vote, and who is able to read any article of the constitution, is entitled to the privileges of an elector. Colored citizens are entitled to vote by virtue of the 15th amendment to the federal constitution. An amendment to the constitution must first be passed by the house of representatives, receive a two-thirds vote of each house the following year, and then be ratified by a popular vote. The penalty for murder in the first degree, arson causing death, and perjury with intent to take life, is death. The crimes of arson endangering life, rape, and maiming may be punished by imprisonment for life, and manslaughter by a fine of not more than $1,000 and imprisonment for not more than 10 years. The laws concerning divorce are regarded as very loose, the following being the grounds upon which divorce may be granted: adultery; fraudulent contract; wilful desertion for three years with total neglect of duty; seven years' absence without being heard from; habitual intemperance; intolerable cruelty; sentence to imprisonment for life; bestiality or any other infamous crime involving a violation of conjugal duty and punishable by imprisonment in the state prison; and any such misconduct as permanently destroys the happiness of the petitioner and defeats the purposes of the marriage relation. All real estate conveyed to a married woman for money, or other property acquired by her personal services during marriage, may be held by her to her sole and separate use. Personal property of the wife vests in the husband as trustee, and upon his death goes to her if living, or if dead to her devisees, legatees, or heirs at law, as though she had always been sole; the husband is entitled to the rents, profits, and interests. When abandoned by the husband, the wife may transact business, sue and be sued, as if sole, during such abandonment. The husband is not liable for debts of the wife contracted before marriage; but she may be sued as if sole, and levy made on her property. Married women may dispose of both real and personal property by will in the same manner as other persons; but in conveyances by deed the husband must join, except during abandonment, when the wife may convey by order of the superior court. Connecticut is represented in congress by four representatives and two senators, and is entitled to six votes in the electoral college.—The state debt in 1860 amounted to only $50,000, which had been borrowed from the school fund. From July 1, 1861, to Oct. 1, 1865, five issues of bonds were made, amounting in the aggregate to $10,000,000, and drawing 6 per cent. interest, payable semi-annually. This bonded debt has been steadily diminishing; the bonds outstanding April 1, 1873, amounted to $5,095,900. Deducting $738,078 cash in the

treasury, the debt of the state beyond its assets amounted to $4,357,822. The revenue of the state during the year ending April 1, 1873, amounted to $2,054,465, and the expenditures to $1,175,567. The chief sources of revenue and expenditure were as follows:

RECEIPTS.

Insurance department	$26,231 61
Interest on deposits	22,020 74
State tax from towns	785,888 77
Tax on telegraph companies	725 78
" agents of foreign insurance companies	21,254 21
" savings banks	471,222 90
" mutual insurance companies	305,670 88
" railroad companies	339,620 44
" express companies	2,000 00
" non-resident stockholders	25,256 47
Miscellaneous sources	32,475 06
Forfeited bonds	19,565 80
Avails of courts	2,532 58
Total	$2,054,465 54

EXPENDITURES.

General assembly	$97,276 18
Salaries	65,650 00
Judicial expenses	146,823 34
State paupers	3,416 50
Board of education	8,935 61
Directors of state prison	600 00
Public buildings, &c	89,117 60
Families of volunteers	108,448 85
Advances to quartermaster general	56,000 00
" " paymaster general	43,000 00
" " adjutant general	8,000 00
Miscellaneous accounts, including common and normal schools, &c	362,426 53
Total	$1,175,567 88

The assessed value of real estate, according to the census of 1870, was $204,110,500; personal estate, $221,322,728; total, $425,433,237; true value of real and personal estate, $774,631,524. In 1860 the assessed value of real estate was $191,478,842; personal estate, $149,778,134; total, $341,256,976; true value of real and personal in 1860, $444,274,114, and in 1850, $155,707,980. The total taxation not national in 1870 was $6,064,843, including $1,875,024 state, $20,113 county, and $4,160,706 town, city, &c. In 1860 the total taxation not national was $1,015,037.—The public institutions sustained wholly or in part by the state are the reform school, normal school, industrial school for girls, American asylum for the deaf and dumb, general hospital for the insane, retreat for the insane, school for imbeciles, Hartford hospital, soldiers' orphans' homes, and the state prison. The state reform school, for the instruction, employment, and reformation of juvenile offenders, is at Meriden, and is under the control of a board of eight trustees, one from each county. The cost of the building and farm of 163 acres was $115,000. Boys between the ages of 10 and 16 years may be sent here for crime by the several courts of the state for a term of not less than nine months and during minority; they may also be received by indenture from parents or guardians, without expense to the state, for a period of not less than six months. The inmates are required to devote 6½ hours a day to labor and 4½ to study. Since the opening of the school, March 1, 1854, 1,662 boys have been received; 152 were received during the year ending April 1, 1872, at which date there were 314 inmates. The institution is self-sustaining, the receipts in 1872 amounting to $840 more than the expenditures. The boys are employed in the chair shop, on the farm, and in domestic labor. A similar institution, the industrial school for girls, was formally opened at Middletown, June 30, 1870, and is now in successful operation. It will accommodate 70 girls. For its establishment $10,000 were appropriated by the state, $70,000 contributed by individuals, and 46 acres of land given by the town of Middletown. Up to April 1, 1873, 123 girls had been admitted and 34 discharged. The American asylum for the deaf and dumb in Hartford is the oldest institution of the kind in the United States, having been incorporated in 1816, and opened April 15 of the following year. The governors and secretaries of state of the several New England states are *ex officio* members of the board of directors. Upward of 2,000 pupils have been received into the institution since its organization. The whole number in attendance during 1872 was 290; greatest number at any one time, 248; average attendance during the year, 247; number of instructors, 15. Of those attending during the year, 59 were supported by Maine, 22 by New Hampshire, 19 by Vermont, 109 by Massachusetts, 10 by Rhode Island, 60 by Connecticut, 1 by New Jersey, and 10 by Friends. The number of pupils April 1, 1873, was 225, of whom 51 were from Connecticut. The asylum makes an annual charge of $175 to each pupil. In the several New England states legislative appropriations have been made in aid of indigent pupils desiring to attend the institution. The fund of the asylum, April 1, 1872, amounted to $339,228, mostly derived from an endowment of land by congress in 1819. Connecticut has no institution for the blind; but an annual grant of $3,000 is made by the state for the education of the indigent blind at the Perkins institution in Boston. The general hospital for the insane, incorporated by the legislature in 1866, is pleasantly situated at Middletown, on the banks of the Connecticut river. The buildings are of Portland freestone, and when completed will be 768 ft. in length, with accommodations for at least 450 patients. The total cost will be $525,000, exclusive of the land, which was given by the town of Middletown. Provision is made for four classes of patients: pauper, indigent, private, and insane convicts. The institution is under the supervision of a board of trustees, consisting of the governor *ex officio*, and one person from each of the eight counties in the state. During the year ending April 1, 1873, the average number receiving daily treatment was 264. At that date there were 271 inmates, including 217 pauper patients, 98 indigent, 12 private, and 9 insane convicts; 74 were admitted and 65 discharged during the year. The revenue

amounted to $79,793, and the total expenditures to $77,981. Up to April 1, 1873, 643 patients were admitted, of whom 116 were discharged recovered, 72 improved, and 91 stationary, and 93 died. The retreat for the insane in Hartford was incorporated in 1822, and has at various times received aid from the state and donations from individuals. The average number in this institution is about 250, who are maintained at an average cost of about $5 a week. Since its opening about 5,000 patients have been treated. According to the census of 1870, there were 772 insane in the state. The accommodations of the state not being sufficient for this number, some have been treated in the hospitals of neighboring states, while others have been unprovided for. A school for imbeciles has been established at Lakeville, in the town of Salisbury, which receives both state and private pupils. In 1873 the number of pupils was 50, of whom 20 were state beneficiaries. The number dismissed or improved since the opening of the institution has been 26 per cent. A commodious building has been erected with the $10,000 appropriated by the legislature in 1872, which will enable the institution to accommodate all of this unfortunate class for which the state may have to provide. The Hartford hospital was first opened Aug. 1, 1860, with accommodations for 44 patients; by the addition of wings to the main building, the institution now accommodates 100 patients. The whole cost of buildings and land (70 acres) was $188,495, of which $127,200 were contributed by individuals and $30,000 by the state, which has also made an annual grant of $2,000 toward defraying current expenses. The permanent fund of the hospital amounts to $153,500. Patients are received from the various towns of the state for a small compensation, while not a few are admitted free. A large number of Connecticut soldiers have been received and treated, for which the institution received from the state to March 1, 1871, $15,095 08. From the opening of the hospital to that date 2,239 patients received its benefits, at an average cost of $5 68. Of this number 1,596 recovered, 155 improved, 120 remained stationary, and 304 died; 1,097 were Americans, and 1,142 of foreign birth; 1,827 of temperate and 412 of intemperate habits. Their average time at the hospital was 8·3 weeks. During the year ending Feb. 28, 1871, 370 patients (246 males and 124 females) were under treatment. The receipts amounted to $19,443 63; disbursements, $19,854 90. There is also a hospital in New Haven, supported in part by the state. Two soldiers' orphans' homes for the education of children of deceased soldiers, situated at Mansfield and Darien, are under the charge of voluntary societies, aided by state appropriations. The number of children of this class in the state in 1871 receiving $1 50 weekly each for their support was 1,648. The state prison is situated at Wethersfield. The building was erected in 1827, contains 232 cells, and is inadequate to the requirements of the state. The construction of a new one has been recommended by a committee of the legislature. The mode of inflicting punishment on convicts is by confinement in dark and solitary cells, and by fetters and shackles. Punishment by the shower bath and "moderate whipping, not exceeding ten stripes for any one offence," though not prohibited by law, has been discontinued. Convicts are employed in making boots, rules, &c., and burnishing plated ware. Instruction is given in the common English branches. The library contains 1,165 volumes. The number of convicts March 31, 1873, was 175; 142 were Americans and 33 foreigners, 3 females, 40 colored, 14 under 20 years of age, and 13 over 50; 160 for first offence; 23 under sentence for life. The income for the year was $26,452, including $14,695 from shoe shops, $3,030 from wire shop, $2,220 from burnishing shop, $4,833 from rule shops, and $880 for boarding United States prisoners. The expenditures amounted to $24,941. The whole number of persons committed to the various jails during 1871 was 2,593, being 347 more than in the preceding year. The whole number confined April 1, 1871, was 289, being 24 fewer than on April 1, 1870. There were six homicides committed in the state during the year.—The improvements made within the past few years in the system of education in Connecticut have given a marked prominence to the common schools of the state. The supervision and control of the educational interests of the state were in 1865 intrusted to a board of education, consisting of the governor, lieutenant governor, and four members, one from each congressional district, appointed by the legislature. The board appoints its own secretary, who performs the usual duties of a superintendent of education. In 1868 the law providing for the levying of tuition or rate bills was repealed, and a system of free public schools established, each town being required to levy a tax sufficient, with existing school revenues, for the maintenance of free schools. By the act of 1870 each town is required to maintain free public schools for at least 30 weeks in the year, in every district in which the number of persons between the ages of 4 and 16 years is 24 or more, and for at least 24 weeks in every district in which the number of such persons is less than 24. Proprietors of manufacturing establishments are by law prohibited, under a penalty of $100 fine, from employing children under 14 years of age who have not attended school for at least three months in each year; they are further required to see that all persons employed by them are able to read and write and understand the elements of arithmetic. An amendment to the law is recommended by the board of education, in order to secure the actual attendance at school for at least three months each year of all the children relieved

from employment. There is no state school tax in Connecticut (though a tax of this kind has been recommended), the money for the support of common schools being derived from special funds and local taxation. The constitution directs that the school fund shall remain perpetual, and that the interest be used for the support and encouragement of common schools and for no other purpose. This fund, chiefly derived from the sale of the lands of the state in the Western Reserve, Ohio, amounted on Sept. 2, 1872, to $2,044,190. For the year ending March 31, 1873, the receipts amounted to $156,158; disbursements, $137,812; number of children returned, 132,924; rate of dividend per capita, $1. Owing to the increase of the number of school children, the fund is relatively diminishing. In 1863 the dividend per child was $1 20, and in 1873 it was $1. The town deposit fund amounts to $763,661; revenue, $45,650. During the first year of the free schools there was an increase in attendance of more than 6,000 over the increase in enumeration, while it is evident that not fewer than 10,000 children were prevented from attending school under the rate-bill system. The average school year has advanced to 8 months and 12½ days, making it longer than the school year in most of the other states of the Union. In 1872, of the children of school age, 95·23 per cent. were attending schools. There were 1,535 school districts in the state, and 1,630 public schools, taught by 2,420 teachers, of whom 1,721 were females. The number of children between the ages of 4 and 16 years was 131,748, of whom 122,342 attended school; 113,588 were registered in the public schools, and 8,754 in private schools; and 3,541 persons over 16 years of age were registered in the public schools. The total amount expended for public schools during the year (including $833,759 for teachers' salaries, $370,369 for new school houses, and $70,005 for repairs) was $1,496,980, being an advance of $218,154 beyond the expenditure of any former year for this purpose. The total amount received from all sources for public schools was $1,503,617, including $128,468 revenue of school fund distributed Feb. 28, 1871; town deposit fund, $45,167; income of local school funds, $9,627; town tax, $641,837; district tax, $410,708; voluntary contributions, $11,012; other sources, $256,796. The amount raised for each child enumerated was $11 70, while in 1871 it was $11 83. In addition to the public schools, there are other free schools supported by individual liberality, or by the income of invested funds. Among these are the day and evening schools maintained at Manchester by the Cheney brothers, at an annual expense of $3,400; Bacon academy at Colchester, with a fund of $25,000, free to the inhabitants of that place; Norwich free academy, with a fund of $90,000; and the Hopkins grammar school in New Haven. Since 1867 evening schools have been maintained as a part of the free public school system, with the most satisfactory results. The experiment was first made in New London, and its success led to the establishment of similar schools both for boys and for girls in several of the cities and larger villages. In six of these schools situated respectively in New London, Hartford, New Haven, Birmingham, and Bristol, the average length of the session of 1870–'71 was 15 weeks; average number of pupils, 593. The state normal school at New Britain was established by the legislature in 1849, and opened in May of the following year. It was under the charge of a board of eight trustees, one from each county, till 1865, when it was transferred to the supervision of the state board of education. After suspension for two years on account of the withdrawal of the appropriation by the legislature, it was reorganized in 1869. The annual appropriation for this school is $7,500. The expenses for 1872 were $9,655; number of instructors, 5; pupils in attendance, 148, of whom 130 were females; average age of pupils, 20 years and 2 months. The whole number of pupils connected with the school since its organization is 2,628, at an average cost to the state of less than $40 each. Teachers' institutes are held in the different counties under the direction of the secretary of the board of education, for which purpose a sum not exceeding $3,000 per annum may be drawn from the state treasury. During 1870–'71, 33 teachers' institutes were held, attended by 2,286 teachers and school officers. The total expenditures amounted to $2,999, including $2,483 for 289 lectures. Connecticut has three colleges, three theological schools, one law, one medical, and one scientific school. The total number of volumes in the libraries of these institutions is 142,750. There are 25 academies and seminaries (of which 4 are exclusively for females), with more than 100 instructors and 1,404 pupils, of whom 685 are females, and libraries containing 6,185 volumes. In addition to these there are four seminaries for the superior instruction of females exclusively, with 27 instructors, 198 pupils, and 1,750 volumes in their libraries. Yale college (Congregational), in New Haven, was established in 1701, and in 1873 had 73 instructors, 904 students in all departments, and 90,000 volumes in the library. Connected with it are a theological seminary, law school, school of fine arts, and the Sheffield scientific school. The last named institution has received the proceeds realized by the sale of the scrip for 180,000 acres of land granted to Connecticut under the act of congress of 1862, known as the agricultural college bill. The state holds four scholarships in the Sheffield scientific school. Six seats in the board of corporation, previously occupied by the six senior senators in the state legislature, were transferred to the alumni in 1872. Trinity college (Episcopal) was established in 1823 at Hartford, and in 1872 had 16 instructors, 163 students, and a library of 15,000 volumes.

Wesleyan university (Methodist), at Middletown, was established in 1831; number of instructors, 10; students, 163; volumes in library, 20,000. The theological institute of Connecticut (Congregational), established in 1834 at East Windsor, and subsequently removed to Hartford, has 3 professors, 25 students, and 7,000 volumes in library; whole number of alumni, 290. The theological department of Yale college (Congregational), organized in 1823, has 7 professors, 55 students, and 865 alumni; amount of endowment, $308,000. Berkeley divinity school at Middletown (Episcopal), organized in 1855, has 10 professors, 38 students, and 149 alumni; endowment, $40,000. In 1866 the number of students in the colleges and professional schools of the state was 883; in 1867, 946; in 1868, 960; in 1869, 1,016; in 1870, 1,037; in 1871, 1,048. Of the latter, 179 were inhabitants of Connecticut, and 69 Connecticut students in 1871 were in colleges of other states. There are public libraries in 64 towns, which receive state aid under the act of 1856 providing for state library appropriations. The principal libraries of the state, exclusive of those connected with colleges, &c., number 13, and contain 66,280 volumes. According to the census of 1870, the total number of libraries was 63, having 285,937 volumes. These included the state library, with 12,000 volumes; 5 school, college, &c., with 142,000 volumes; 1 historical and scientific, with 14,000; and 56 circulating, with 117,937. The number of newspapers and periodicals was 71, with an aggregate circulation of 203,725; copies annually issued, 17,454,740. Of these there were 16 daily, circulation 35,730; 1 semi-weekly, circulation 800; 43 weekly, circulation 107,395; 2 semi-monthly, circulation 900; 7 monthly, circulation 56,400; 1 bi-monthly, circulation 1,150; and 1 quarterly, circulation 1,350.—In 1870 the state contained 826 religious organizations, having 902 edifices, with 338,735 sittings, and property valued at $13,428,109. The statistics were as follows:

DENOMINATIONS.	Organiza'ns.	Edifices.	Sittings.	Property.
Baptist, regular	111	115	44,075	$1,366,300
" other	5	5	1,075	12,100
Christian	4	4	750	6,500
Congregational	290	360	133,175	4,728,700
Episcopal, Protestant	139	147	50,962	3,275,534
Friends'	2	3	350	1,500
Jewish	5	3	1,850	105,000
Lutheran	4	3	1,240	23,500
Methodist	184	188	63,975	1,834,025
Miscellaneous	3	1	85	1,350
New Jerusalem (Swedenborgian)	1	..	.....	.....
Presbyterian, regular	7	10	3,875	195,300
Reformed Church in America (late Dutch Reformed)	1	2	1,300	100,000
Reformed Church in the United States (late German Reformed)	1	1	250	6,000
Roman Catholic	44	34	26,418	1,429,500
Second Advent	7	7	1,380	8,700
Shaker	1	1	300	5,500
Spiritualist	2	2	600	13,500
Unitarian	1	1	225	6,000
Universalist	14	15	6,850	309,100

—The Connecticut river and the seacoast adjacent to its mouth were first explored by the Dutch from New Netherlands, who laid claim to the territory. The counter claim of the English was based upon the patent of Connecticut granted in 1631 to Lord Say and Seal, Lord Brooke, Sir Richard Saltonstall, and associates, by the earl of Warwick, to whom with others the first patent of New England had been granted by James I. in 1620. In 1633 the Dutch made a settlement at Hartford, but in a few years sold out to the English. Early in 1636 permanent settlements were made at Hartford, Windsor, and Wethersfield, by companies from Massachusetts, bearing a commission from the general court of that colony investing certain of their number with legislative and judicial power to govern the new plantation. The first court was held April 26, 1636, at Hartford. In the following year the three towns organized themselves into an independent government for self-protection against the Pequots, declared war against that tribe, and completely annihilated its power. In 1638 New Haven was settled by a distinguished company of emigrants from England who had landed at Boston the preceding year. The peculiar feature of the civil polity adopted by them was that all civil power should be vested in members of the church. A constitution for the government of the colony of Connecticut was perfected and approved by a general vote of the people, Jan. 14, 1639; the first example in history of a written constitution organizing a government and defining its powers. It formed the basis of the charter of 1662, and its leading features have been copied into the constitutions of the several states and of the United States. After stating that the word of God requires human governments, and that the object of such governments is to maintain and preserve the moral and civil welfare of the people, it makes provision for the three departments of government, the legislative, judicial, and executive, which were all to be filled by persons to be appointed by and to derive their power from the people. The freemen (and all might be made freemen who had been admitted inhabitants by the towns themselves) were to meet annually in April, at a court of elections, for the choice of so many magistrates and other public officers as should be found requisite, one of whom was to be designated as governor. All elections were by ballot. The governor was voted for first, and elected by a plurality vote; then the magistrates, subsequently called assistants, were voted for in a similar manner. The governor, or executive, sat with the magistrates in their judicial capacity, and both the governor and magistrates sat with the deputies elected by the several towns in a legislative capacity. As the deputies constituted a majority of the general assembly, the legislative power was substantially in the hands of the people, while the governor and magistrates could advise as to neces-

sary legislation. As there were to be two sessions of the legislature annually, one in the spring, called the court of elections, and the other in the fall, for enacting laws and other public services, the towns chose their deputies semi-annually. In this constitution, and in the subsequent administration of it till 1661, there is no recognition of any higher human power than the people, and practically Connecticut was an independent government. But when Charles II. came to the throne, fears began to be entertained for the future, and the general court determined to make a formal avowal of their allegiance to the crown and apply for a charter. This charter, embracing the colonies of Connecticut and New Haven, was obtained in 1662, and the union between the colonies was completed in 1665. The charter granted the colony jurisdiction over the lands within its limits; provided for the election of a governor, deputy governor, and 12 assistants, and two deputies from each town, substantially the same as provided for under the previous constitution; allowed the free transportation of colonists and merchandise from England to the colony; guaranteed to the colonists the rights of English citizens; provided for the making of laws and organization of courts by the general assembly, and the appointment of all necessary officers for the public good, the organization of a soldiery, providing for the public defence, &c. This charter was of so general a character, and conferred so large powers, that no change was necessary when Connecticut took her stand as one of the independent states of the Union, on the declaration of independence in 1776; and it continued, without alteration, as the constitution of the state till 1818, when the present constitution was formed. Until 1670, at the general election, all the freemen assembled at Hartford and personally voted for the state officers and assistants. Thereafter they voted by proxy or sent up their votes. In July, 1685, a writ of *quo warranto* was issued by the king's bench, and served on the governor and company, with the design of taking away the charter and uniting the New England colonies in one government under a royal governor. Sir Edmund Andros arrived in Boston, Dec. 19, 1686, with his commission as governor. In October, 1687, he came to Hartford while the assembly was sitting and demanded the charter. According to current history, it was produced and laid upon the table, but was subsequently seized and concealed in the famous charter oak. (See Andros, Sir Edmund.) Andros seized the government, which he administered, or rather it was administered under him, in a very oppressive manner. On the dethronement of James II., and the consequent deposition of Andros, the government, on May 9, 1689, resumed its functions as if the period since the usurpation of Andros to that time were annihilated; and as the charter had not in the king's court been declared forfeit, it was after a struggle allowed to continue in force, the freest constitution ever granted by royal favor. Until October, 1698, the general assembly constituted but one house, consisting of the governor, assistants, and deputies, over which the governor presided, and the secretary of state was clerk. At that session the governor and assistants, or council, were constituted the upper house, and the deputies from the several towns the lower house, with power to appoint their own speaker and clerk. Every bill must pass both houses before it could become a law. Soon after this separation of the general assembly into two bodies, the superior court was constituted a distinct judicial body. From the union of the colonies till 1701 the general court had met in Hartford. Thereafter it was ordered that the May session should be held in Hartford and the October in New Haven. While the early laws of Connecticut were in general liberal and enlightened, it is not denied that many extreme penalties were prescribed by the early statutes. There were twelve offences punishable with death, while there were severe laws against Baptists, Quakers, witchcraft, &c. The authenticity of the code commonly called the blue laws of Connecticut is denied by the best authorities. During the revolutionary struggle no other state in the Union furnished so many men according to its population, or so much aid according to its means, as Connecticut; and Gen. Washington had no coadjutor more efficient than Jonathan Trumbull (Brother Jonathan), governor of Connecticut. On June 14, 1776, twenty days before the declaration of independence, the general assembly of Connecticut unanimously instructed their delegates in congress to propose to that body "to declare the united American colonies free and independent states, absolved from all allegiance to the king of Great Britain." The whole number of soldiers enlisted in Connecticut during the civil war was 54,882, being equivalent to 48,181 men for three years. There were 2,340 enlistments for three months, 5,602 for nine months, 529 for one year, 25 for two years, 44,556 for three years, 26 for four years, and 1,804 not known. The organizations were 30 regiments of infantry, 2 of heavy artillery, 2 light batteries, 1 independent battery, and 1 regiment and 1 squadron of cavalry. During the war 1,094 men and 97 officers were killed in action; 666 men and 48 officers died from wounds; 3,246 men and 63 officers died from disease; and 389 men and 21 officers were missing. (See supplement.)

CONNECTICUT RIVER, the largest river of New England, rises on the borders of New Hampshire and Canada, and flows southerly into Long Island sound at Saybrook, Conn., in lat. 41° 16′ 15″ N., and lon. 72° 21′ W. It was called by the Indians Quonektacat, signifying Long river, and has always been noted for its beauty. It rises by two head streams near the N. boundary of Coös co., N. H., 1,600 ft. above the sea, flows within a few miles through

Second and Connecticut lakes, and receives several small tributaries, one of which separates New Hampshire from Canada on the west. From Connecticut lake it flows W. and S. W. to a point near the N. E. angle of Vermont, whence it forms the boundary line between that state and New Hampshire, flowing generally S. S. W. It afterward flows S. across the W. part of Massachusetts and through the centre of Connecticut to Middletown, where it turns S. E. and flows to the sound. The length of the river is more than 400 m. Its width at the N. boundary of Vermont is about 150 ft., which increases to about 390 ft. within 60 m., and varies from 450 to 1,050 ft. in Massachusetts and Connecticut. The Connecticut is navigable to Middletown, 30 m., for vessels of 10 ft. draught, and to Hartford, 50 m., for those drawing 8 ft. There are numerous falls in the river, the chief of which are the Fifteen-mile falls in New Hampshire and Vermont, the White river falls below Hanover, Bellows Falls, those at Montague and South Hadley in Massachusetts, and at Enfield in Connecticut. These falls afford abundant water power. By means of canals around them, the river has been made navigable for boats of 8 or 10 tons burden as far as Newbury, near the mouth of Wells river in Vermont, 270 m. from the sound. The principal tributaries of the Connecticut are: from the west, the Passumpsic, Wells, White, and Williams in Vermont, the Deerfield and Westfield in Massachusetts, and the Farmington in Connecticut; from the east, the Ammonoosuck in New Hampshire, and Miller's and Chicopee in Massachusetts. Above Hartford the Connecticut is spanned by numerous bridges. Great efforts have been made recently for the artificial propagation of shad and salmon in the Connecticut river, where they formerly abounded. As a result, numerous shad have been caught, but the experiment has proved less successful in regard to salmon. The Connecticut valley is about 300 m. long, with an average width of 40 m.; it contains valuable agricultural lands and much highly attractive scenery.

CONNEMARA, a district forming the W. part of county Galway, Ireland, about 30 m. long and 20 m. broad, celebrated by its wild and picturesque scenery. (See GALWAY.)

CONNER. See PERCH.

CONNER, David, an American naval officer, born in Harrisburg, Pa., about 1792, died in Philadelphia, March 20, 1856. He entered the navy as midshipman in January, 1809, and as acting lieutenant took part in the action between the Hornet and Peacock, Feb. 24, 1813. The Peacock surrendered in a sinking condition in 15 minutes after the engagement commenced, and Lieut. Conner was charged with the duty of removing the prisoners, most of whom he succeeded in saving, though not without losing three of his own men. In 1813 he became a lieutenant, and remained in the Hornet, under the command of Capt. James Biddle. In the action with the Penguin in 1815 he was dangerously wounded. For his gallant conduct in that action he was presented with a medal by congress, and the legislature of his native state voted him a sword. On March 3, 1825, he was promoted to the rank of commander, and on March 3, 1835, to that of captain. At the opening of the war with Mexico he was in command of the squadron on the West India station. In May, 1846, having received intelligence that Arista had determined to attack Gen. Taylor, he sailed from Vera Cruz for Brazos Santiago, where he arrived on the 8th, too late for the fighting. He now established an efficient blockade of the Mexican ports on the gulf. In August and October two fruitless attempts were made to enter the port of Alvarado. On Nov. 14 the port of Tampico was captured. On March 9, 1847, he directed the landing of the army under Gen. Scott at Vera Cruz, but was soon after compelled by ill health to return home. His last service was the command of the Philadelphia navy yard.

CONOLLY, John, an English physician and author, born at Market Rasen, Lincolnshire, in 1795, died at Hanwell, March 5, 1866. He graduated at the university of Edinburgh in 1821; was professor of medicine in the university of London from 1828 to 1831, and consulting physician to the lunatic asylum at Hanwell from 1839 to 1843, and to that for idiots at Earlswood. He acquired distinction by his adoption of the system of non-restraint in the treatment of the insane. He invited Dr. Guggenbühl to England, and after examining the institution for cretins near Interlaken and the schools of Seguin and Voisin in Paris, he procured the establishment of the temporary school for idiots at Colchester and of the royal asylum at Surrey, of both of which he became an active manager. Besides contributions to current medical literature, he published "Inquiry concerning the Indications of Insanity" (1830), "Construction and Government of Lunatic Asylums" (1847), "Treatment of the Insane" (1856), and "Study of Hamlet" (1863).

CONON, an Athenian general and admiral, living about 400 B. C. In 413 he commanded a fleet of 18 ships off Naupactus, to prevent the Corinthians from sending aid to the Syracusans; in 409 he was elected general in connection with Alcibiades and Thrasybulus; and in 407 he was made the chief of the ten generals appointed to supersede Alcibiades, whose dissolute conduct and mismanagement had disgusted the Athenian people. Soon after, in an engagement with the Spartan admiral Callicratidas, off Mitylene, he was defeated with the loss of 30 vessels, and was compelled to take refuge with the remnant of his fleet in the harbor of that city, where he was closely blockaded by his opponent till the Athenian victory at Arginusæ effected his deliverance. Having been soon after appointed, with five colleagues, to the command of a large fleet, he proceeded at once to the Hellespont to engage the Lace-

dæmonian squadron, under the command of Lysander, but was surprised at Ægospotami (405), and sustained that memorable defeat which placed Athens at the mercy of her great rival. How far he was responsible for this disaster it is not easy to determine, but that his colleagues were shamefully remiss in duty there is no doubt. He was the only Athenian general on his guard, and, with the division under his command, escaped to his friend Evagoras, king of Cyprus, where he remained eight years. In 395, having repaired in person to the Persian court to offer his services to Artaxerxes II. against the Spartans, he was appointed with Pharnabazus to the joint command of a powerful fleet, with which, in August, 394, he gained a splendid victory over Pisander at Cnidus. The next year Conon and Pharnabazus sailed for the Peloponnesus. After they had laid waste the coast of Laconia, Conon repaired to Athens, and rebuilt the walls and fortifications both of the city and of the Piræus. Thus he had the satisfaction at last of being hailed by his countrymen as at once the deliverer and the restorer of the city. Having been subsequently sent by the Athenians on an embassy to Tiribazus, satrap of Ionia, to oppose the intrigues of Antalcidas, who was endeavoring to negotiate a general peace under the mediation of Persia, he was seized in violation of public faith, and thrown into prison. According to some accounts he was put to death, but it is more probable that he escaped to Cyprus and there spent the rest of his days. The public life of Conon was one of the purest and most useful, as well as one of the most eventful, that adorn Athenian annals.

CONRAD. I. Duke of Franconia, elected king of Germany in 911, when the male line of descendants of Charlemagne had become extinct, died Dec. 23, 918. The royal authority had been so much shattered under the feeble rule of his predecessors that his brief reign was only a series of campaigns against his disobedient vassals. He was unsuccessful in his efforts to reconquer Lorraine from France, and to subdue Duke Henry of Saxony; but in Swabia he overcame two lords who had broken the public peace and had them tried and executed. He also expelled Arnulf, the seditious duke of Bavaria, who however took revenge by inciting the Hungarians against Germany. They invaded the empire and carried destruction to the borders of France. Conrad died from a wound received in battle with them, and on his deathbed entreated his subjects to elect his former adversary, the duke of Saxony, his successor. **II.** King of Germany from 1024, and emperor of the Romans from 1027, died at Utrecht, June 4, 1039. He was one of the wisest and most energetic among the rulers of Germany. Immediately after his election he visited all the provinces of the empire, establishing law and order with a powerful hand. He proclaimed the *treuga Dei* (truce of God), and endeavored to base the imperial power more immediately upon the lower nobility, that is to say, upon the people, since at that time the middle and lower classes were not yet thought of in politics. In 1026 he went to Italy, chastised the seditious vassal princes and municipalities, confirmed the rule of the Normans in southern Italy, and was crowned Roman emperor by the pope. Having restored peace and order throughout Italy, he returned to Germany, suppressed a rebellion instigated by Ernest of Swabia, repelled the Hungarians who attempted to wrest Bavaria from the empire, conquered Burgundy, and defeated the Poles, who made inroads into eastern Germany. While his son Henry subdued the Slavs, who had invaded northern Saxony, Conrad went once more to Italy, where the imperial authority was again defied by the nobles and clergy (1036). He was only partially successful, and was compelled to raise the siege of Milan, after which he returned to Germany. He was succeeded by his son Henry III. **III.** King of Germany, a son of Frederick of Swabia, born in 1093, died at Bamberg, Feb. 15, 1152. At the age of 20 he distinguished himself in the defence of the emperor Henry V. against his enemies. Returning from a pilgrimage to Jerusalem, he found Lothaire, elected by the Guelph party, upon the imperial throne, against whom he was in 1128 crowned king by the Lombards, but was ultimately defeated, excommunicated, and his coronation declared null. Still his courage and frankness, perhaps also apprehensions of the overshadowing power of the Guelphs, obtained for him many friends among the German princes, and after Lothaire's decease (1137) he was elected king (1138). He now turned against his rival, Henry the Proud, duke of Bavaria and Saxony, and wrested Bavaria from him, but left him in possession of Saxony. The attempts of Henry's brother, Guelph IV., to reconquer Bavaria, were frustrated by Conrad. In the mean time the Italian municipalities had risen against the papal power, and Conrad was invited by both parties to aid them. Distrusting the friendship of the Italians, he declined to do so, nor was he tempted by the offer of the imperial crown. A crusade which he undertook, jointly with Louis VII. of France, was unsuccessful. He was defeated at Iconium in 1147, and compelled to desist from his attempts to conquer Damascus and Ascalon. When he returned to Germany, in 1148, he found disorder reigning supreme. The Guelphs, allied with the Norman king, Roger of Sicily, had once more tried to reconquer Bavaria; in Poland the legitimate duke Ladislas II. required Conrad's assistance against his own brothers; and Italy once more urged upon him the necessity of his presence. While preparing for a campaign in Italy, he suddenly died, probably poisoned by agents of King Roger. **IV.** King of Germany, born in Apulia in April, 1228, died at Lavello, May 21, 1254. The son of the emperor Frederick II., he was crowned king of the Romans in 1237, and succeeded his

father as king of Germany in 1250. With great energy he contended against the intrigues of the pope and the usurpations of his tools among the German princes, repulsed the Mongols who had invaded the empire, and succeeded in putting down his father's rival, Henry Raspe of Thuringia, set up by the pope (1247). But both before and after his accession he had to contend with a new rival king, William, count of Holland; and though in spite of defeat he maintained himself upon the throne, the prestige of his power was lost. Embarrassed by the increasing anarchy in Germany, he went to Italy in order to save at least the Apulian kingdom (1251). He subdued it once more, and conquered Naples; but the enmity of the pope, who had excommunicated him, foiled his efforts to reëstablish the imperial authority. He fell a victim to a lingering disease, occasioned as was supposed by poison, leaving only an infant two years of age (Conradin) as the last heir of the dynasty of Hohenstaufen.

CONRAD, Karl Immanuel, a German architectural painter, born in Berlin, March 30, 1810. He studied in Berlin, and was a teacher of his art as early as 1830, soon producing many fine works. He subsequently applied himself, under the direction of Schadow at Düsseldorf, to the Romanesque and Gothic styles of art, and has executed many pictures of churches and other edifices. His masterpiece, representing the cathedral of Cologne, was painted in 1842 at the request of the king, and he made an enlarged copy of it, which was presented by the diocese of Cologne to Pius IX. on the 50th anniversary of his ordination as priest. He visited Belgium and France in 1845, England in 1851, and Italy in 1869. He has painted views of London, Windsor castle, Rome from the Pincio, and a picture of the pope's private apartments in the Vatican. In 1871 he was employed on a painting of the interior of the cathedral of Cologne. He excels in etching.

CONRAD, Robert T., an American jurist and author, born in Philadelphia, June 10, 1810, died June 27, 1858. While studying law, he wrote his first tragedy, "Conrad of Naples," which was produced successfully in the principal theatres of the country. Admitted to the bar at an early age, he became connected with the press, and after other editorial labors began in 1832 the publication of the "Daily Intelligencer" newspaper, which was subsequently merged in the "Philadelphia Gazette." He was obliged by ill health to abandon the labors of daily editorship, resumed the practice of law in 1834, and was appointed recorder of the recorder's court in 1835, judge of the court of criminal sessions in 1838, and of the court of general sessions in 1840. He afterward resumed practice as an advocate, and was editor of "Graham's Magazine," contributor to the "North American," president of a railroad company, and mayor of Philadelphia. While attending to his duties on the bench, he wrote the tragedy of "Aylmere," the hero of which is Jack Cade, who takes the name of Aylmere while in exile in Italy, and is represented as a democratic patriot. He wrote another tragedy, "The Heretic," which has not been acted or published. A volume appeared from him in 1852, under the title of "Aylmere, or the Bondman of Kent, and other Poems." The principal of the additional poems are "The Sons of the Wilderness," composed of reflections on the fate of the Indians, and a series of sonnets on the Lord's prayer.

CONRADIN, the son of Conrad IV., duke of Swabia, and the last of the Hohenstaufen, born in 1252, beheaded Oct. 29, 1268. His father dying while he was an infant, he resided sometimes in the court of Louis of Bavaria, and at other periods under his protection at the castle of Ravensburg. He formed an intimate friendship with Frederick, son of the margrave of Baden, and, on the death of Manfred, who had acted as his regent and subsequently usurped the crown in the Apulian possessions, accepted the invitation of the Italian Ghibellines to place himself at their head. The greater part of the possessions of the Hohenstaufen had been swept away, and his stepfather, Meinhard II. count of Görz, watched every opportunity to seize the remaining inheritance of the family; for Conradin was yet duke of Swabia, and held the ancient Franconian possessions of the Salic emperors. He was aided in his determination by Meinhard and Louis of Bavaria, who accompanied him into Italy to further their own selfish designs. The sale of a large portion of his possessions to these men enabled him to raise troops. In the autumn of 1267 he crossed the Alps with 10,000 men, and at Verona was warmly received by the Scala family, the chief of the Ghibelline party. His relatives here, persuading him to part with his remaining possessions at a low price, deserted him with their followers, leaving but 3,000 men. The Ghibellines, however, remained true to him. Verona raised a large army, Pisa a fleet, and Rome, whose pontiff was forced to flee to Viterbo, opened its gates to him. Conradin entered lower Italy, and at Tagliacozzo met the French army under Charles of Anjou, on whom the crown of Naples had been bestowed by the see of Rome. He beat Charles back, and his men, supposing the victory won, dispersed in search of plunder, when they were attacked by the French and utterly routed, Aug. 23, 1268. Conradin escaped, but was betrayed into the hands of Charles, who caused him to be beheaded in the market place of Naples, he being only 16 years of age.

CONRING, Hermann, a German philosopher and author, born at Norden, East Friesland, Nov. 9, 1606, died at Helmstedt, Dec. 12, 1681. He was the son of a clergyman, studied at Leyden, and was professor of philosophy, medicine, jurisprudence, and political science at Helmstedt, privy councillor to the duke of Brunswick, adviser of the emperor of Germany, and author of more than 100 works on Ger-

man history and jurisprudence, and on scientific and theological subjects. Queen Christina of Sweden in vain sought to attach him permanently to her service. The duke of Brunswick and the kings of Sweden and Denmark conferred titles on him, and Louis XIV. granted him a pension. He encouraged the study of chemistry and pharmacy, and was one of the first to teach Harvey's doctrine of the circulation of the blood. A complete edition of his writings, with a biography, was published by Göbel (6 vols., Brunswick, 1730).—His daughter Elisa Sophie, baroness von Reichenbach, was distinguished as a poet; she died April 11, 1718.

CONSALVI, Ercole, a Roman cardinal, born in Rome, June 8, 1757, died there, Jan. 24, 1824. His father was the marchese Giuseppe Consalvi, and his mother Maria Carandini, sister of the cardinal of that name. Educated in the college of Frascati, he won the regard of Cardinal York, who remained through life his friend and protector. He entered very young the ranks of the Roman prelacy, and was soon appointed auditor of the rota, the highest civil court in Rome, at the solicitation, it is thought, of the exiled aunts of Louis XVI. He became minister of war to Pius VI., after whose death he was chosen secretary of the conclave which elected Pius VII. This election was in a great measure due to Consalvi's tact, and his reputation for ability caused the new pope to appoint him his pro-secretary of state, then cardinal, and finally titular secretary of state. In that capacity he proceeded to Paris in 1801, to negotiate a concordat for the restoration of religion. While the pope was in France on the occasion of the coronation of Napoleon, Consalvi remained at the head of the government in Rome. In 1806, when Napoleon quarrelled with the pope, he insisted on Consalvi's removal from office. The secretary besought Pius VII. not to hesitate in accepting his resignation as a peace offering, and the pope yielded, appointing Casoni his successor. In 1810 he was compelled by Napoleon to go to Paris, and for refusing to be present at the marriage of Napoleon with Maria Louisa was banished to Rheims. In 1813 he was permitted to join the pope in Fontainebleau, and advised him to recall the concordat which he had been forced to sign. On the first restoration Pius VII. sent him to Paris to compliment Louis XVIII.; and after the final downfall of Napoleon he continued to be the representative of the holy see in the congress of Vienna. He obtained the consent of the congress that the Papal States should be restored to their integrity, and successfully resisted the partition of France. He continued at the head of the Roman government until the death of Pius VII. in August, 1823. During his administration he did much to improve the Papal States; he advised and framed the *motu proprio* of 1816, suppressing all feudal rights, monopolies, and oppressive taxes; abolished torture, and the punishment of the *corda* or estrapade; and to him also is due the abolishment of the death penalty for heresy. A new civil code, a commercial code, and a penal code were drawn up in harmony with the spirit of the age; he improved the registry of mortgages, introduced a better system of police, established workhouses in the principal towns, extirpated the banditti from the Campagna, planned the embellishment and sanitary improvement of Rome, and encouraged the liberal arts in the persons of Canova and Thorwaldsen. He left a large sum for a monument to Pius VII. Consalvi's memoirs have been published by Crétineau-Joly (2 vols., Paris, 1864).

CONSCIENCE, Hendrik, a Flemish novelist, born in Antwerp, Dec. 3, 1812. His father, a French marine speculator at Antwerp, allowed him to educate himself by eager but irregular reading. In 1829 he became a private teacher, and upon the Belgian revolution of 1830 he volunteered in the army and served six years, reaching the grade of sergeant major. During his service he wrote a number of spirited French songs, and became the popular poet of the army. Being discharged in 1836, he quarrelled with his family, and maintained himself by turns as a working gardener, an employee in the archives of Antwerp, and clerk of the academy of art. At this time a national party was trying to establish a Flemish literature in opposition to the French spirit and the philosophical ideas of the 18th century. Conscience joined this movement, and in 1837 brought out his *In het Wonderjaer* 1566 ("In the Year of Miracles 1566"), containing a series of brilliant dramatic pictures of the Spanish rule in Flanders. This was received with great popular favor, but his success enraged his father, who renounced him entirely. Through the painter Wappers, however, he obtained a small pension from Leopold I., and was able to continue his literary career. His *Leeuw van Vlaenderen* ("Lion of Flanders") appeared in 1838, and gave him a national reputation. In 1845 he was appointed assistant professor in the university of Ghent, and subsequently became instructor of the royal children in the Flemish language and literature. In 1847 he was made professor, and in 1857 commissary of the administrative department of Courtrai. In 1870 he gained the prize of literature given every fifth year, by his *Bavo en Lieveken*, which is considered by some one of his best romances. Conscience has held consistently his purpose of restoring the Flemish idiom, and has discouraged the use of French by his countrymen, although able to use it himself with ease and power. He stands in the front rank of Flemish writers. His historical romances fail in ideal characterization, but are fresh and interesting. He is most successful in his quiet pictures of home life. His works have all been translated into German, and many of them into English, Danish, Italian, and French. Besides the works mentioned above, he has pub-

lished *Phantasia* (1837), a collection of Flemish poems and legends; *Avonstunde* ("Evening Hours, 1839"), and several other graceful sketches of Flemish manners; *Geschiedenis van Belgien*, an illustrated history gathered from old chronicles (1845); and a number of novels, partly historical, among which may be mentioned *Hugo van Craenhoeve* (1845), *Lambrecht Hensmans* (1846), *Jakob van Artevelde* (1849), *Baes Gansendonck* (1850), *De arme Edelman* and *De blinde Rosa* (1851), *De Boerenkryg* (1853), *Hlodwig en Clotildis* (1854), *De Plag der Dorpen* (1855), *Batavia* (1858), *Simon Turchi* and *Aurelien* (1859), *Het yzeren Graf* (1860), *Bella Stock* (1861), *Moederliefde* (1862), and *De Kerels van Vlaenderen* (1871). He published his memoirs in the *Revue Contemporaine* in 1858.

CONSIDÉRANT, Victor, a French socialist, born at Salins, near Besançon, Oct. 12, 1808. He was educated in the polytechnic school in Paris, entered the army, and rose to the rank of captain of engineers. In 1831, having adopted the social theory of Fourier, he resigned his commission in order to devote himself to its advocacy. In 1832 he was engaged in an unsuccessful attempt to realize that theory at Condé-sur-Vesgre, about 40 m. from Paris, the funds being furnished by a wealthy Englishman. He was associated with Fourier in editing the organ of their school, and on his death in 1837 was recognized as the head of the societary school, as the body of his disciples called themselves, and became the chief editor of the *Phalange*, a monthly review, and of the *Démocratie pacifique*, a daily newspaper which they established in 1845. During this period he wrote and published several books, of which the most important is the *Destinée sociale* (3 vols., 1834–'44). On the outbreak of the revolution of February, 1848, he adhered to the republican party, and was chosen to the constituent assembly from the department of Loiret. In 1849 he was elected to the legislative assembly from the city of Paris; but taking part on June 13 in the public demonstration, headed by Ledru-Rollin, in behalf of the Roman republic, he was compelled to withdraw to Belgium, where he published *La dernière guerre et la paix définitive de l'Europe* (1850), and *La solution, ou le gouvernement direct du peuple* (1851). In 1853 he visited the United States, and selected a site in Texas for a socialistic colony. Returning to Europe in 1854, he was arrested in Brussels on a charge of conspiracy, but was soon set at liberty. A company was then organized in Paris to establish the colony in Texas, and the settlement was named Réunion, but the socialistic attempt failed. Considérant, becoming naturalized as an American, remained in Texas till 1869, when he returned to France.

CONSIDERATION, in law. See CONTRACT.

CONSISTORY, in the Roman Catholic church, the college of cardinals, assembled in session. There are three kinds of consistories: the public, secret, and semi-secret. The first is held with great pomp and ceremony, the pope presiding in full pontificals. None but cardinals are present at the deliberations of the second. Consistorial advocates are lawyers admitted to plead on matters treated of in the consistory, *e. g.*, the canonization of saints; and they enjoy many privileges and emoluments.—In English law, the court held by each bishop for the trial and disposal of all ecclesiastical causes arising in his diocese is called a consistory. In some of the reformed churches the consistory is an ecclesiastical tribunal, corresponding to a church session in the Dutch church, and in others to a presbytery.

CONSOLS, a term denoting a considerable portion of the debts of Great Britain, known as the three per cent. consolidated annuities. The government has borrowed money at different periods upon special conditions, generally the payment of an annuity of so much per cent. on the sum borrowed, and sometimes by lotteries, as in 1747, in which the prizes were funded in perpetual annuities. Owing to the confusion arising from the variety of the stocks thus created, parliament in 1757 passed an act consolidating these annuities into one fund, to be kept in one account in the bank of England, bearing 3 per cent. interest. From time to time some additions have been made to the consols, and some diminution has been effected by the operation of the sinking fund and by the application of surplus revenue; but they are redeemable only at the option of the government. They constitute a transferable stock in which there is daily speculation, and the varying price is taken as an index of the value of other public securities.

CONSPIRACY, in criminal law, a combination by two or more persons to do an unlawful act, or to do something not in itself unlawful by criminal or unlawful means. Many things not punishable when done or contemplated by a single individual, become so when several confederate for the purpose; as in case of a combination to destroy one's reputation by slander, to cheat by false warranties, &c. To render the offence complete, it is not necessary that the purpose should be accomplished, or even that any overt act be done in pursuance of the conspiracy; the offence consisting in the unlawful agreement, and not in the acts which follow it.

CONSTABLE (Fr. *connétable*, from Lat. *comes stabuli*, count of the stable, or master of the horse), a title of office borrowed from Byzantine and old French usage. The constable of France was an officer of the highest rank under the king, having the chief command of the army, the cognizance of military offences, and the authority to regulate all matters of chivalry, such as tilts, tournaments, &c. The office was suppressed by Louis XIII., but revived by Napoleon, and again suppressed at the restoration. In England the office of lord high constable is as old as the conquest, and was hereditary, with powers and duties corresponding to those

in France. It was abolished by Henry VIII., and has not since been revived except for special occasions, as on trials of peers, coronations, &c. An office with a similar title has existed in Scotland to the present day, but it is now merely honorary.—From the same derivation comes the designation of an inferior common law executive officer in England and America. Constables in England are of two kinds, the constable of the hundred, usually called the high constable, and the constable of the vill or tithing, called the petty constable or tithingman. Special constables are also sworn in by the justices on special occasions when a breach of the peace is feared or exists. Constables serve the process of justices of the peace, and they also act generally as conservators of the peace, and may arrest without warrant any person committing a breach of the peace in their presence; and on reasonable suspicion that a felony has been committed, they may arrest and detain for examination the supposed offender; but they cannot arrest without warrant for a mere misdemeanor not committed in their presence.

CONSTABLE, Archibald, a Scottish publisher, born in Fifeshire, Feb. 24, 1774, died July 21, 1827. After serving an apprenticeship to a bookseller, he opened a small shop in Edinburgh in 1795 for the sale of old books and works on Scottish history and literature. In 1801 he undertook the publication of the "Scots Magazine" and "Farmer's Magazine." Upon the establishment of the "Edinburgh Review" in 1802 he became its publisher. In 1803 he commenced the "Edinburgh Medical and Surgical Journal," and in 1805 published Sir Walter Scott's "Lay of the Last Minstrel." With the exception of the first series of the "Tales of my Landlord," he published all of Scott's works down to the year 1826, as well as the works of Dugald Stewart and other eminent Scotchmen. He also became proprietor of the "Encyclopædia Britannica," to which he published a supplement. In 1825 he commenced "Constable's Miscellany," but a few months afterward became bankrupt in the commercial revulsion of that year, Sir Walter Scott being liable for most of his debts.—See "Archibald Constable and his Literary Correspondents," edited by his son, Thomas Constable (3 vols., Edinburgh, 1873).

CONSTABLE, John, an English landscape painter, born at East Bergholt, Suffolk, in 1776, died in London, March 30, 1837. In 1800 he was admitted a student of the royal academy. He had a thorough contempt for the conventionalities of the art, and when asked by Sir George Beaumont what style he intended to adopt, replied, "None but God Almighty's style." His subjects were rural landscapes with figures, and he was fond of depicting all the phenomena connected with rain storms, the effects of dew on the grass or foliage, and other transient minutiæ. Among the best of his works are the "Valley Farm," in the Vernon gallery, and the "Corn Field," in the national gallery. In 1829 he was elected a royal academician.—See "Memoirs of John Constable, R. A., chiefly from his Letters," by C. R. Leslie, R. A. (enlarged ed., 1845).

CONSTANCE. I. (Ger. *Konstanz*, or *Kostnitz*; anc. *Constantia*), a city of Baden, on the S. shore of Lake Constance, or rather on the narrow channel which connects the lake with its N. W. arm, the Untersee, 73 m. E. N. E. of Basel; pop. in 1871, 10,052. It is walled and defended by towers and a ditch. The most interesting building is the minster, begun in 1052, rebuilt in the 16th century, and within a few years ornamented with a spire and tower of open work. The nave is supported by 16 pillars, each of a single block 18 ft. high, and there is a splendid altar, and many relics and works of art. In the merchants' hall, once a Carthusian monastery, is the room in which the council of Constance was held. The city abounds in memorials of John Huss and Jerome of Prague, who were executed here. The manufactures embrace cotton cloth, yarn, silk, musical instruments, clocks, and watches. Fishing, navigation, and agriculture employ numbers of the inhabitants. The trade is considerable, and steam communication is kept up with other towns on the lake. A bridge connects the city with the opposite suburb of Peterhausen. Constance was formerly a free imperial town, but was annexed to the possessions of the house of Austria in 1549, and by the latter ceded to Baden in 1805. **II. Lake**



Constance.

of (Ger. *Bodensee;* Lat. *Lacus Brigantinus*), a large lake in the S. W. of Germany, on the Swiss border, forming a centre in which Switzerland, Austria, Bavaria, Würtemberg, and Baden meet. It is about 1,300 ft. above the sea, and lies between lat. 47° 28′ and 47° 50′ N., and lon. 8° 52′ and 9° 42′ E.; is 40 m. long from N. W. to S. E., about 9 m. wide, 200 sq. m. in area, and 964 ft. in maximum depth. It is divided into the upper and lower lakes, the former being the larger, and the latter being subdivided into the lower lake, or Untersee, and Lake Zell, or Zellersee. The Rhine enters the lake at its S. E. end, and leaves it near Stein at the N. W. extremity, while upward of 50 other streams empty into it. Its waters are dark green, very clear, and seldom wholly frozen over, the only known instances being in the years 1695, 1830, and 1841. They are subject to sudden risings, which have never been satisfactorily explained. The shores are flat or gently undulating, fertile, highly cultivated, and dotted over with picturesque towns, villages, and ruined castles, but are not remarkable for natural scenery. Commerce is carried on by steamers and sailing vessels on the lake, and railways touch at several points on the shores. There are submarine telegraphic cables between Rorschach and Lindau, and between Romanshorn and Friedrichshafen, the latter being at a depth of about 900 ft.

CONSTANCE, Council of, a council of the Roman Catholic church, opened Nov. 5, 1414, closed April 22, 1418. The great western schism had commenced with the antipope Clement VII. (Robert de Genève), who fixed his residence at Avignon, and obtained the countenance of the French king. Urban VI. after his election had been for nearly a year acknowledged as sole pope by the whole of Christendom; and he was succeeded by Boniface IX., Innocent VII., and Gregory XII. Robert de Genève had as his successor Peter de Luna (Benedict XIII.), who maintained his claims and continued his schism until his death in 1424. The efforts made by politicians in church and state to remedy this division had failed up to the opening of the assembly in Constance. A council was held in Pisa in 1409, which took upon itself to depose both Gregory and Benedict, the pope and antipope; and a third contestant, Alexander V., was elected in their stead. This action is held by every canonist in the Roman Catholic church as utterly null in law. The rule is that there is no truly œcumenical council except such as are convened by the head of the church, and that the acts of no council in faith and morals have a binding force on the conscience save through the sanction of the pope. The council of Pisa was not therefore acknowledged as œcumenical, and its action only increased the existing confusion. In 1410 the antipope Alexander V. died, and his place was filled by Baltassare Cossa (John XXIII.). The great powers, headed by the emperor Sigismund, sought a remedy for the scandal in a meeting of the states general of Christendom. Gregory XII., the lawful pope, did not call it; and when it met, under the presidency of the antipope John XXIII., it only embraced a comparatively small number of cardinals, patriarchs, archbishops, and bishops, with a multitude of inferior ecclesiastics and laymen. John XXIII., called upon in the very first session to abdicate his dignity, bound himself by oath to do so, and then fled secretly from Constance, lest he should be held to his promise. In the perplexity caused by his flight, it was proposed to decree the superiority of the council above persons even of papal rank, with power to depose all who should refuse to obey the will of the assembly. At length the antipope John was persuaded to resign (March, 1415), was subsequently deposed (May 29), and placed in confinement near Constance. Pope Gregory, who had already solemnly pledged himself to abdicate the moment the other contestants had done so, did not wait for the abdication of Peter de Luna; but giving to the lord of Rimini, Carlo Malatesta, full power as legate, sent him to assure the assembly of Constance that he was ready to make a full renunciation of the papal dignity. This was announced in the 13th session, June 15. On the acceptance of his proposition, a bull was issued by the pope convening the council from that date, and giving thenceforth to its acts a canonical validity; after which, in July, Gregory abdicated. Peter de Luna refusing to resign, and shutting himself up in the fortress of Peñiscola, near Valencia, the fathers of the council, after waiting 100 days for an answer, commanded the cardinals to enter the conclave. On Nov. 11, 1417, they chose Ottone Colonna, who took the name of Martin V. Regarding himself as the successor of Gregory XII., he issued a bull confirming the convocation, and further confirmed all that had been done *concilianter* (*i. e.*, according to the canonical rules governing an œcumenical council) in matters of faith and morals, from the day of lawful convocation. In the earlier sessions of the council the doctrines of Wycliffe were examined and condemned. John Huss also appeared, maintained his own tenets, and was condemned and executed (July 6, 1415). His disciple, Jerome of Prague, recanted, but having relapsed was also put to death (May 30, 1416).

CONSTANS, Flavius Julius, emperor of Rome, youngest son of Constantine the Great and Fausta, born about A. D. 320, died in 350. At an early age he was appointed governor of western Illyricum, Italy, and Africa, and on the division of the empire at his father's death in 337 received those countries as his portion. His brother Constantine, having invaded his territory, was killed at the battle of Aquileia in 340, and Constans became emperor of the entire West. He is represented as weak, profligate, and rapacious. His misrule caused Magnentius, commander of the troops in Gaul,

to revolt and to send emissaries to put him to death. He fled toward Spain, but was overtaken and slain. He protected the Christian faith, as established by the council of Nice, against the Arians and Donatists, and closed many of the pagan temples.

CONSTANT DE REBECQUE, Henri Benjamin, a French orator and author, born at Lausanne, Oct. 25, 1767, died in Paris, Dec. 10, 1830. He was descended from a family of French Protestant exiles, and his father was a colonel in the service of Holland. He studied successively at the universities of Oxford, Erlangen, and Edinburgh, and became acquainted with many of the scholars and writers of France, Germany, and Great Britain. He married a German lady, and was for several years chamberlain of the duke of Brunswick. Having been divorced from his wife, he went to Paris in 1795, and began his political career as a moderate republican. His pamphlet, *De la force du gouvernement actuel de la France*, &c., attracted considerable attention; and other political writings, mostly published in the periodicals of the day, added to his reputation. At this time he became an intimate friend of Mme. de Staël, and aided in the formation of the *club de Salm*, in opposition to the royalist *club de Clichy*. In 1799 he was placed by Napoleon in the tribunate, but showed so much opposition to the first consul's encroachments upon constitutional liberty, that he was banished in 1801. Mme. de Staël was expelled from France about the same time, and with her he associated with Goethe, Wieland, Schiller, and other literary celebrities at Weimar, and at Necker's residence in Switzerland. At this time he made a translation of Schiller's *Wallenstein*, and wrote a novel called *Adolphe*. He afterward visited various European courts, and lived for a time at Göttingen, where he married Mme. de Hardenberg. In 1814 he published a pamphlet entitled *De l'esprit de conquête et de l'usurpation*, which attracted much attention. He returned to Paris in the wake of the invading armies, and espoused the cause of the Bourbons, publishing articles in their support in the *Journal des Débats*. The day before Napoleon's return from Elba he published a violent assault upon him, but was soon after invited to the palace, won over to what now appeared the cause of France, and appointed a councillor of state, the long persecuted Mme. de Staël, too, lending her influence to Napoleon. Constant now assisted in drawing up the famous *acte additionnel* to the constitution. After the battle of Waterloo, being on the proscribed list, he retired to England, but was allowed to return in September, 1816. The reactionary tendency of the government led him to join the force of so-called liberal writers, and he aided in founding the *Minerve*, and wrote many able articles on constitutional liberty and kindred subjects. He was elected to the chamber of deputies by the department of Sarthe in 1819, and became prominent as a speaker, at the same time continuing to write brilliant pamphlets and articles for periodicals on the questions of the day. After the death of Gen. Foy in 1825, he was the acknowledged leader of the opposition, besides being considered the highest expounder of monarchical constitutionalism. His health had failed before the revolution of 1830, and he was absent from Paris at the time of that outbreak. On his return he concurred in the proceedings which placed Louis Philippe on the throne, and was appointed president of the council of state. He also remained in the chamber of deputies, but his prestige was gone; and when he was presented as a candidate for the French academy, he failed of election. These disappointments are believed to have hastened his death. He had just completed his philosophical work, *De la religion considérée dans sa source, ses formes et ses développements* (5 vols., Paris, 1823–'31), and left uncompleted a supplement to it, *Du polythéisme romain considéré dans ses rapports avec la philosophie grecque et la religion chrétienne* (2 vols., 1833). His political works are edited by Laboulaye (2 vols., 1861; 2d ed., 1872).

CONSTANTIN, Abraham, a Swiss painter on porcelain, born in Geneva in 1785. He was originally an ornamenter of watch dials, but upon going to Paris devoted himself to painting on porcelain. His first work, a copy of Raphael's *Madonna della seggiola*, was executed for the empress Josephine. He afterward spent many years in Italy studying the works of Raphael. In 1832 he was commissioned by Louis Philippe to make copies of Raphael's chief works in the Vatican. The "Transfiguration" alone occupied him a year. He also made copies of the masterpieces of Titian, Correggio, and others, and in a few instances attempted original compositions and portraits from life. His best works are in the museum at Sèvres and in the royal collection at Turin. He made some valuable discoveries in the mechanical processes of his art, particularly with reference to the effect of burning upon colors.

CONSTANTIN (or **CONSTANCE**) **FAULCON,** also Phaulcon or Paulcon, a Greek adventurer, born at Custode, in the island of Cephalonia, in 1648, put to death in Siam in June, 1688. Engaged in commercial ventures in the East Indies, he was several times shipwrecked, and on one such occasion, when thrown on the coast of Malabar, met an ambassador of the king of Siam, who had also been shipwrecked. Constantin helped him to reach Siam, and in return received an appointment at the Siamese court. After the death of the prime minister, Constantin became the ruling spirit of that country. Threatened by the jealousy of the mandarins, he sought the assistance of France. In 1685 Louis XIV. despatched the chevalier de Chaumont as ambassador to Siam, while Siamese ambassadors were sent to France. The object of their negotiations appears to have been the subjection of Siam to French

rule, with Constantin as viceroy. He was made a French citizen, with the promise of the title of count, and a small force was sent out to aid him in his designs. It arrived in October, 1687, and Bangkok and Mergui were surrendered to its commander; but the native nobles raised an insurrection, and having captured Constantin had him put to death for treason. His son afterward acquired considerable influence in Siam. The adventures of Constantin have been written by Deslandes (*Histoire de Constance, premier ministre du roi de Siam*, Amsterdam, 1756), and by Gallois in the *Moniteur* (Paris, 1853).

CONSTANTINE. I. The eastern province of Algeria, bounded N. by the Mediterranean, E. by Tunis, W. by the province of Algiers, and S. (where the limit has not been precisely fixed) by territories occupied by native tribes; area, from 70,000 to 110,000 sq. m.; settled pop. in 1870, according to the report of the governor general, 137,156, of whom 33,288 were French, 21,692 other Europeans, 7,835 Jews, and 74,351 Mohammedans. Besides these there are many nomadic natives, estimated at upward of 1,000,000 in number. The territory is divided into three parts by the two ridges of the Atlas mountains: the part sloping N. to the Mediterranean and broken by spurs of the mountains; that lying between the two ridges, forming a series of fertile and well watered valleys; and that sloping S. toward the Sahara from the principal ridge of the Atlas. The largest streams are the Rumel and Seybouse. The olive and cereal grains are produced; tobacco is raised in considerable quantity, and some progress has been made in the cultivation of cotton. Mines of iron, lead, tin, and antimony have been opened, and marble quarries are worked at several points. Coral is gathered on the coast. The province is governed by a prefect, and includes the arrondissements of Constantine, Setif, Philippeville, Bona, and Guelma. It corresponds nearly to the ancient kingdom of Numidia. **II.** A city (anc. *Cirta*), capital of the province, 200 m. E. S. E. of Algiers; pop. in 1866, 35,417, of whom nearly 10,000 were Europeans. It stands on an eminence shut in on three sides by the Rumel, and connected by a low ridge on the fourth with the neighboring mountains. Its position is further strengthened by walls built by the Arabs from old sculptured stones of the Roman ruins, and by a citadel. A bridge, also of sculptured stone, crosses the ravine on one side. The old church, in the Byzantine style, is enclosed in the citadel. There are many Roman relics in and about the city. The streets are narrow and dirty, and the buildings inferior. The city has considerable trade with Tunis and with the Algerian ports, mainly in grain, fruits, and wool, while manufactures of woollen and leather goods are carried on. A bishopric was established here in 1867.—Ancient Cirta, being nearly destroyed in A. D. 311, was rebuilt and called Constantina by Constantine the Great. It belonged to Tunis for a long time, was taken by the Algerines in 1520, and came nominally into the possession of the French with the rest of Algeria in 1830, but held out against actual occupation till Oct. 13, 1837, when it was captured after a siege under Gens. Damrémont, who fell there, and Vallé.



Constantine, Algeria.

CONSTANTINE, the name of about thirteen emperors, of whom two ruled the whole Roman empire, the others only that of the East. There is much confusion in regard to the order of these emperors, some historians omitting several of them, and others adding to their number. The most conspicuous of them are noticed in the following articles; for the reigns of others see Byzantine Empire.

CONSTANTINE I., Caius Flavius Valerius Aurelius Claudius, surnamed the Great, emperor of Rome, born, according to the best authorities, at Naissus (now Nissa) in Upper Mœsia, in February, 272, died near Nicomedia, May 22, 337. His father, Constantius Chlorus, was in 292 appointed Cæsar or lieutenant emperor of the western portion of the empire, which at that time was divided between the two Augusti, or emperors, Maximian and Diocletian. Constantine was sent to serve under Diocletian as a hostage for his father's loyalty. In several campaigns in Egypt and Persia he rose to the rank of tri-

bune. When in 305 Diocletian and Maximian retired into private life, Constantine, who had everything to fear from the jealousy of the new eastern emperor Galerius, took refuge with his father, who had succeeded Maximian as emperor of the West. He followed him to England, where Constantius died in 306. The army immediately proclaimed Constantine emperor, but Galerius disapproved of the choice, and, recognizing Constantine as lieutenant emperor, appointed Severus emperor of the West. While Constantine protected Gaul and the Rhenish frontier against the invasions of the Germans, violent struggles arose at Rome between Severus and Maximian's son Maxentius, who had been elected emperor by the people and army. Maximian himself, having become tired of private life, once more laid claim to the imperial purple. He had Severus assassinated, but was overcome by his own son and compelled to seek refuge with his son-in-law Constantine, whose aid he endeavored to obtain by promising him the succession. Constantine, while preparing to comply with Maximian's request, became aware that he himself was secretly conspired against by his treacherous ally, whom he now in 310 compelled to commit suicide. Maxentius, in order to avenge his father's death, was about to set out for Gaul, when suddenly Constantine led his legions to Italy, and triumphantly entered Rome. There he was greeted as emperor by the senate, Maxentius having been accidentally drowned. During this campaign Constantine is said to have seen in the sky a flaming cross, bearing the inscription: Ἐν τούτῳ νίκα, "In this conquer." From that time the symbol of Christianity appeared on the shields of the soldiers and the banners of the Roman army. In the mean time Galerius, who still assumed supreme authority, had appointed Licinius emperor of the West, but Constantine made common cause with him. Galerius died in 311; his successor Maximin was defeated by Licinius, and thus in 313 the empire was once more divided between two rulers, Constantine for the West and Licinius for the East. The next year Constantine attempted to overthrow Licinius, but could only wrest from him Illyricum, Pannonia, and Greece. A peace of nine years followed, during which Constantine consolidated his power by reforms in the civil, military, and judicial administration. At last, in 323, he was ready to realize his desire to reunite the whole empire. He took the field against Licinius, defeated him in two battles at Adrianople and Chalcedon, compelled him to surrender, and, in spite of a solemn promise to spare his life, condemned him to an ignominious death. It is in vain that zealous writers have tried to relieve Constantine's reputation from the crimes committed to satisfy his ambition. His father-in-law, his brother-in-law Licinius, his own son Crispus, his nephew the son of Licinius, a boy of 11 years, and lastly his wife Fausta, were successively his victims. As a statesman and politician, Constantine favored and protected Christianity, though he was baptized only on his deathbed. He conceived that the vast structure of a centralized empire, comprising almost the whole civilized world, was not to be built upon the decaying remnants of paganism. A new and vigorous principle, which, by inculcating obedience to existing authorities, seemed admirably adapted to the wants of absolute monarchism, was to instil new life into the Roman empire. This may have been Constantine's idea. As early as 312 he granted absolute toleration to the Christians, and restored to them the property confiscated by his predecessors, and every attempt to restrain the religious liberty of Christians was severely punished. By convening and attending the general council at Nice (325), Constantine openly declared the Christian to be the official religion of the empire. The removal of the seat of government from Rome to Byzantium (330) was another great measure by which he intended to strengthen the empire. New Rome was to be the name of the new capital, but the name of Constantinople (the city of Constantine) prevailed. All vestiges of republican forms were extinguished by him;



Coin of Constantine.

while in the administration of affairs he brought order out of chaos, and constructed a powerful machinery of government by separating the civil from the military administration, but uniting both in the hands of the sovereign. He made his court outshine in splendor and magnificence even those of the oriental princes, and created a hierarchy of officials which to this day has remained the model of European monarchical courts. A standing army of 300,000 men and 29 naval squadrons supported the imperial authority. Heavy impositions upon the people were necessary to cover the enormous expenses, but the introduction of a regular financial system, and a just distribution of the taxes, made them appear less onerous than they would otherwise have been. With the exception of a brief war in 332 against the Goths, occupying the present Danubian principalities, the reign of Constantine after the reunion of the empire was a peaceful one. He was preparing for war against Persia when he suddenly fell ill, and died on the day of Pentecost, after having been baptized by the bishop of Nicomedia. He was buried in the church of the apostles at Constantinople.

CONSTANTINE II., emperor of Rome, eldest son of Constantine the Great by his second

wife Fausta, born at Arles in Gaul, Aug. 7, 312 (according to Gibbon in 316), killed near Aquileia, Italy, early in 340. He was named Cæsar and consul when still a little child, and in 335 was appointed governor of Gaul, Spain, and Britain. On the death of his father in 337 the empire was divided between his three surviving sons, each of whom received from the senate the title of Augustus; but a kind of supremacy was accorded to Constantine, the eldest, and he is therefore reckoned as a Roman emperor. In the partition Constantine received Constantinople, Gaul, Spain, Britain, and a small part of Africa; Thrace and the countries of the East were allotted to Constantius; and Constans was acknowledged as sovereign of Italy, Africa, and western Illyricum. Constantine became dissatisfied with the division, and demanded from Constans the cession of Africa. This being refused, he crossed the Julian Alps in 340, and invaded Italy. With a few attendants he was drawn into an ambuscade and killed. His body was found in the little river Alsa, and honored with an imperial funeral. Constans refused to share with Constantius any part of the dominions of Constantine, and thus became master of more than two thirds of the former Roman empire.

CONSTANTINE IV., surnamed Pogonatus (the Bearded), emperor of the East, born in 648, died in 685. He was the son of Constans II., who in 654 crowned him Augustus, and whom he succeeded in 668. In the following year he conducted a successful expedition into Sicily, but he was hard pressed both by the Saracens and the Bulgarians. To his two brothers he gave the title of Augustus, but allowed them no share in the government. Some of their adherents demanded that they should share the actual sovereignty, urging that as there were three equal persons in the Godhead, so there should be three equal sovereigns on earth. Constantine hung some of the theologians who advanced this argument, and the others agreed to acknowledge his supremacy. The brothers were pardoned; but their claims being again renewed, he caused their noses to be cut off in the presence of the bishops assembled in the sixth general synod of Constantinople. He gained the favor of the church by remitting the payment made on the election of a new pope; and offered the hair of his two sons on the shrine of St. Peter as a symbol of their adoption by the pope. He was succeeded by his son Justinian II.

CONSTANTINE V., surnamed Copronymus, emperor of the East, born at Constantinople in 719, died off Selymbria, Sept. 14, 775. He was the son of Leo III., was crowned by his father in 720, and in 733 married a Khazar princess, who took the name of Irene. He became emperor in 741. His reign in the interior was a long succession of atrocious crimes and excesses, if the accounts of his contemporaries, mainly religious adversaries, are to be believed. In his wars he was successful, defeating in turn the Saracens, Slavic invaders, and the Bulgarians. But he is best known by his opposition to the use of images in the churches, and to the increase of monasteries. In 754 he summoned a council at Constantinople, which after six months' deliberation unanimously declared that all visible symbols of the Saviour, except in the eucharist, were either blasphemous or heretical; that image worship was a corruption of Christianity and a renewal of paganism; and that all images should be destroyed. He laid claim to the exarchate of Ravenna, and courted the favor of Pepin, to whom he is said to have sent the first organ ever known in France.

CONSTANTINE VI., emperor of the East, born in 771, died about 797. He was the son of Leo IV. In 780 he was crowned emperor, his mother Irene acting as regent. The five sons of his grandfather Constantine Copronymus by his second marriage repeatedly conspired against him. For the first offence they were pardoned; for the second they were condemned to the ecclesiastical state; for the third the eldest was deprived of his eyes, and the tongues of the others were cut off by order of Irene. Constantine was affianced by his mother to Rotrudis, a daughter of Charlemagne, but was afterward forced by her to marry Maria, a Paphlagonian princess, whom he disliked. In 790, by the aid of his Armenian guards, he removed Irene from the regency, put her minister Stauracius to death, divorced Maria, and married Theodota, one of her attendants. His divorce and second marriage were denounced by the clergy, while by his rigor he alienated his Armenian guards, and a conspiracy was formed in favor of Irene. The emperor fled from Constantinople, but was captured and brought back to the imperial palace, where his eyes were put out by order of his mother in 797. According to one statement, he died on the same day; according to others, he survived some years in obscurity. He was the last of the Isaurian line, which had held the empire for 80 years. (See IRENE.)

CONSTANTINE VII., surnamed Porphyrogenitus ("born in the purple," or properly, in the imperial apartment called Porphyra), emperor of the East, born in 905, died Nov. 15, 959. He was the son of Leo VI., and in 911 succeeded him, his uncle Alexander being his acting colleague. On the death of Alexander in 912 Constantine became emperor under a council of regency. He had a great fondness for literature, which he cultivated, while his father-in-law, the usurping Romanus Lecapenus, who was proclaimed emperor Dec. 17, 919, administered the affairs of the empire. In 945 he became sole emperor, but he still devoted himself to literature, leaving the cares of state to his wife Helena. He is said to have been poisoned by his son Romanus, who succeeded him. Constantine occupies an important position in literature. His own works treat of subjects relating to his times, of which without them we should be in almost entire ignorance. They are all written

in Greek. The most important are: a life of his grandfather, Basil I.; Περὶ τῶν θεμάτων, a description of the provinces of the empire; *De Administrando Imperio*, a work without a Greek title, written to instruct his son in the political state of the empire, and containing much information in relation to the geography, ethnology, and politics of the time; Βιβλίον τακτικόν and Βιβλίον στρατηγικόν, two treatises on the art of war; and Ἔκθεσις τῆς βασιλείου τάξεως, which gives a detailed account of the ceremonies at the court of Constantinople. He wrote several smaller treatises on religious and other matters, and caused many works to be compiled by the most able scholars of the time.

CONSTANTINE XIII., Palæologus, the last emperor of the East, born in 1394, killed at the taking of Constantinople, May 29, 1453. He was the son of Manuel and brother of John Palæologus, emperors of Constantinople. He succeeded his brother as emperor in 1448, his succession being however disputed by his younger brother Demetrius, who claimed that, having been born in the purple, he was the legitimate heir. The sultan Amurath II. had made large conquests in the Byzantine empire, and now held his court in Adrianople; and by his assent the crown was given to Constantine, who was then in Greece. But Mohammed II., the son of Amurath, resolved to complete the conquest of the Byzantine empire by the capture of Constantinople. Constantine's appeals for aid to the princes of Christendom met with little response. The siege was formally opened April 6, 1453. The defence was obstinate, and for weeks it appeared that the siege would be unsuccessful. Mohammed offered favorable terms, which were refused by Constantine, who declared that he would find a throne or a grave under the walls of Constantinople. The decisive assault was fixed for the 29th of May, the sultan promising double pay to his soldiers, and that the man who first mounted the walls should be rewarded by the government of the richest province of his empire. While the action hung in even scales, an arrow or bullet pierced the armor of Giovanni Giustiniani, the commander of the Genoese auxiliaries, who had borne the bravest part in the defence. In spite of the remonstrances of Constantine, the Genoese troops fled through a breach which the Turks had effected, and were followed by the other auxiliaries. The walls were then stormed, and Constantine, who fought to the last, was killed by an unknown hand. His body, recognized by the golden eagles embroidered on the shoes, was discovered under a heap of slain; the head was cut off and brought to Mohammed, who however gave the body an honorable burial. It is said, though Gibbon doubts the truth of the story, that the head was sent around Persia and Arabia as a trophy.

CONSTANTINE NIKOLAYEVITCH, grand duke of Russia, second son and fourth child of the emperor Nicholas, born in St. Petersburg, Sept. 21, 1827. He was made grand admiral when a mere child, and carefully educated for the navy. He visited Constantinople in 1845, and two years later made a voyage from Archangel to the Mediterranean, visiting several European cities during his absence. In September, 1848, he married Alexandra, daughter of the duke of Saxe-Altenburg. In the following year he accompanied Paskevitch in the Hungarian campaign. During the Crimean war he commanded the fleet of the Baltic in conjunction with Lütke. Being acknowledged leader of the old Russian party in opposition to the progressive views of his elder brother Alexander, his father required him to take an oath of fidelity to the heir apparent. Alexander, on his accession in 1855, placed him at the head of the ministry of the marine. He was charged with the execution of the decree which emancipated the serfs, and was made lieutenant general in Poland during the political agitations which resulted in the insurrection of 1863. In January, 1865, he became president of the council of the empire.

CONSTANTINE PAVLOVITCH, grand duke of Russia, son of the emperor Paul I., younger brother of Alexander I., and elder brother of Nicholas, born in St. Petersburg, May 8, 1779, died at Vitebsk, June 27, 1831. His grandmother, Catharine II., is said to have destined him to reign over a new empire of the East, in accordance with a popular prophecy that a Constantine should rule again at Constantinople, and attempted to educate him with that view; but he was a wilful and capricious youth, and cared for nothing but military exercises. At the age of 17 he married the princess Juliana of Saxe-Coburg, but after some years of unhappiness she left him and returned to Germany. He accompanied Suvaroff to Switzerland in 1799, and subsequently had a command at Austerlitz, and fought in several battles in the struggle with France, displaying bravery, but little skill as a commander. The duchy of Warsaw having been given to Russia by the congress of Vienna, and transformed by Alexander into a constitutional kingdom of Poland in 1815, he was made commander-in-chief of the Polish forces, with powers which made him the virtual ruler, though Zajonczek was the nominal viceroy. He gave the army a thorough discipline, but his capricious severity alienated from him the most distinguished of its officers. In 1820 he conceived a violent passion for a Polish lady, the countess Johanna Grudzinska, and through the intercession of the emperor obtained a divorce from the princess of Saxe-Coburg, with permission to marry again. In return he formally renounced for himself and his descendants the right of succession to the crown. The document containing this renunciation was kept secret until the death of Alexander in 1825, when, though actually proclaimed emperor by a revolutionary party at St. Petersburg, Constantine insisted upon maintaining his renun-

ciation, and assisted at the coronation of Nicholas, who was 17 years his junior. He continued in command at Warsaw, where his violent measures constantly fomented the anti-Russian feelings of the Poles. Four months after the breaking out of the French revolution of 1830 he was driven from Warsaw by an insurrection, and took a command in the Russian army under Diebitsch which was sent to reduce the country to subjection, but disgusted the Russians by the lack of zeal he evinced. Being recalled by the emperor, he retired to Bialystok, but was soon driven away by the Poles under Chlapowski, his brother-in-law, and not long after died of cholera. His wife, who had been made princess of Lowicz, survived him but a few months.

CONSTANTINOPLE (Gr. Κωνσταντινούπολις, the city of Constantine; Turkish, *Istambul* or *Stambul*), the capital of Turkey, situated at the S. W. entrance of the Bosporus, upon a triangular peninsula belonging to the European (Thracian) shore, and formed by the Golden Horn (the harbor of Constantinople), an inlet of the sea, and the sea of Marmora, in lat. 41° N., and lon. 29° E. Its population, including all its suburbs, was in 1848, according to the official tables of the board of health of that year, estimated at 778,000; the present population is by some estimated at 1,000,000, and by others, who are probably nearer the truth, at not more than 400,000 or 500,000. Of the inhabitants more than one half are Mussulmans, and the remainder are Greeks, Armenians, Jews, Persians, and other orientals, and many Levantines or native Christians of European descent. The location of Constantinople is equally favorable in a commercial and in a political point of view. Its harbor, which is capable of containing 1,200 ships, is thronged



General View of Constantinople.

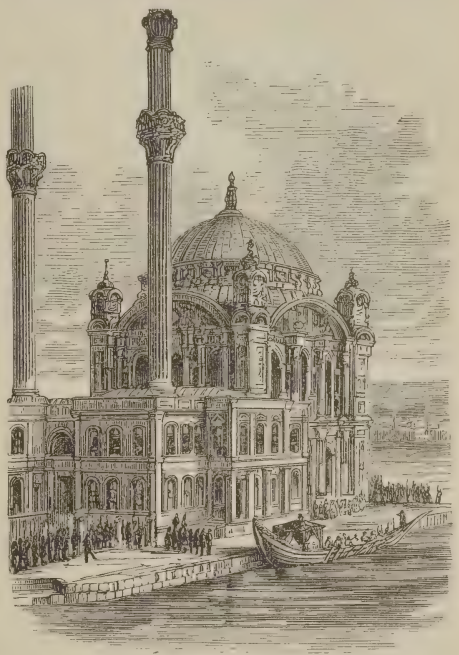
by vessels of all nations, and its commanding position at the junction of the Mediterranean and Black seas would, in the opinion of many, render it, if in the possession of a strong and energetic power, the key of the political supremacy in Europe and Asia.—The picturesque aspect of the city is celebrated; but the favorable impression made by the beautiful hilly shores, beset with villas and gardens, vanishes at the first glimpse of the interior of the city. The streets, before the great fires of 1865, '66, and '70, were nearly all narrow, crooked, and exceedingly dirty, the houses dilapidated, and the atmosphere filled with offensive odors. The old city proper is about 12 m. in circumference, and is enclosed on the land side by a triple wall and moat, which, although unimportant as defensive works according to the requirements of modern military science, might in an emergency offer considerable resistance to an enemy. The wall has 27 gates. The old streets, the irregularity of which defies all attempts of the stranger to find his way, have generally no names, nor are the houses numbered; they are badly paved, not lighted at night, and in addition to their general cheerlessness they are the resort of thousands of ownerless dogs. The houses here are for the most part built of wood, and hence destructive conflagrations are of frequent occurrence. During one night in 1852, seven fires destroyed an aggregate of 3,500 houses. A still more destructive conflagration took place in September, 1865, which is said to have swept away 8,000 houses, 20 mosques, and a large number of baths, khans, and public buildings. Another

severe fire occurred in May, 1866; and still others in June, 1870, and early in 1873. The city is divided into separate districts inhabited by Turks, Greeks, Armenians, and Jews. The Turkish districts are the most extensive. The bewildering labyrinth of streets, lanes, and alleys is almost unrelieved by public squares, of which only the following are worthy of mention: At Meidan (horse square), a portion of the old hippodrome; Serai Meidan (palace square); Serasker Meidan, a portion of the old Forum Tauri; Tavuk Bazaar (poultry market); Jindi Meidan; Et Meidan, where the public executions take place; and Vefa Meidan. A feature peculiar to Constantinople is the bazaars or market halls, large fire-proof buildings lighted from above, in which hundreds of tradesmen and shopkeepers retail their wares, and some of which enclose several covered streets. Open markets for the sale of



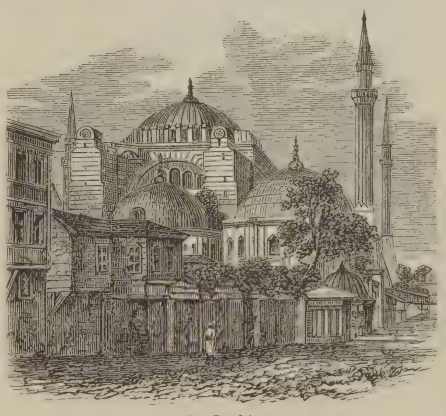
Bazaar.

horses and cattle, fish, &c., are kept daily in several streets or squares; also a market for old clothes, not inappropriately called the Bit Bazaar, or lice market. The Avret Bazaar (women's market) was formerly set apart for the sale of female slaves. Of castles there remains only one, the castle of the seven towers (Yedi Kule), originally built as a citadel, but afterward used as a state prison for princes, and the ambassadors of nations at war with Turkey. The sultan's residence of state is the Serai Humayun (seraglio), a small walled city of itself, nearly 2 m. in circumference, and including mosques, dwelling houses, baths, gardens, governmental offices, the mint, arsenal, and treasury building. Formerly it was inhabited by at least 6,000 persons, and entirely inaccessible to strangers. The mystery which surrounded it gave rise to the most fabulous accounts of the splendor and magnificence of this imperial residence, all of which have vanished since it has been thrown open to visitors, who could not fail to see that the sultan's palace stands far



New Palace.

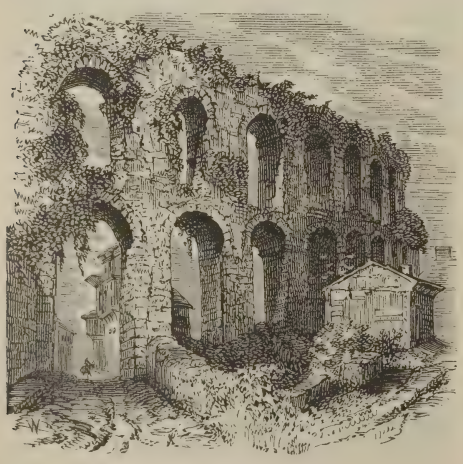
below the residences of other European monarchs in sumptuousness and commodiousness. The outer gate of the seraglio is called the Sublime Porte, a designation frequently applied to the Turkish government. The old seraglio (Eski Serai), erected by Mohammed II. in the centre



St. Sophia.

of the city, is about ¾ m. in circumference, and encloses the office of the secretary of war, two barracks, the military academy, &c. The number of prayer houses or mosques in Constan-

tinople is very large. There are about 500 larger ones (*jamihs*), 100 of them in the old city proper, and the number of lesser ones (*mesjids*) is given at 5,000; but this is probably an exaggeration. Unrivalled in gorgeousness is the great Agia Sofia, formerly the church of St. Sophia, originally founded by Constantine in 325, rebuilt by Justinian in 532–'8, transformed into a mosque by Mohammed II. in 1453, and renovated by the architect Fossati in 1847. The edifice is built of light bricks, but throughout lined with colored marble; its ground plan has the form of a cross, 350 ft. long and 236 wide; the diameter of the dome measures 107 ft.; the height from the ground to the cupola is 180 ft. The ceiling and the arches between the columns are inlaid with beautiful mosaic work and gilt; the gallery, 50 ft. broad, is sustained by 67 columns, some of which are of green jasper, and are said to have been taken from the celebrated temple of Diana at Ephesus; nine massive bronze portals are covered with the most artistic alto-rilievo work. Other remarkable mosques are Kutchuk (Little) Agia Sofia, built by Justinian; Kilisse Jamih (mosque of the churches), the burial place of several Byzantine emperors; Exi Marmara Jamih (mosque of the six marble columns), said to have been a temple of Jupiter; the mosque of Mohammed II., with which are connected eight *medresses* (colleges), a hospital, an eating house for the poor, &c.; the mosque of Sultan Ahmed, the only one that has six minarets; the Sulimaniye, built by Solyman the Magnificent in 1550; the Shah Sadeh Jamih (mosque of the princes), and the mosque Nuri Osmani, in the vestibule of which stands a sarcophagus of porphyry, said to have enclosed the mortal remains of Constantine the



Ruins of the Aqueduct of Valens.

Great. Constantinople is the seat of the patriarchs of the Greek and Armenian churches. The Greeks have 21 churches in the old city; the prayer houses of the other denominations are small and unimposing. The number of Mohammedan and Greek convents is considerable. No one of the numerous religious orders of the Mohammedans is without one or



Ancient Cistern.

more convents. Among the charitable institutions is a large number of *imarets* or soup houses, in which tens of thousands of persons are fed. There are 200 hospitals, in some of which Christians are provided for, over 2,000 public baths, and 40 khans (large enclosures, including warehouses and hotels). Two aqueducts 9 or 10 m. long, built by the emperors Hadrian and Constantine, furnish the city with water. The *cisterna basilica*, constructed under Justinian, the roof of which rests upon 336 marble columns, is still used as a reservoir.—The number of primary schools in Constantinople, in which only reading and the prayers are taught, is over 1,000; the former secondary schools have been abolished, and replaced by adult schools for instruction in Arabic, rhetoric, mathematics, and history. Most of the mosques have their medresses. There are also several special preparatory schools for civil service, as the college of "the sultan's mother," inaugurated in 1850, and others. Popular education is still at a very low point, despite the reforms that have been introduced by recent sultans. The military academies are as yet the only educational establishments in which a systematic course of studies, according to the modern standard of science, is pursued. Besides these, there are a medical and a veterinary college, and a naval academy. There is a number of public libraries, mostly connected with mosques, and some of them supposed to contain valuable old manuscripts.—Among the suburbs of Constantinople only five are frequently mentioned, viz.: Pera, Galata, Tophana, Kasim Pasha, and Scutari, all but the last named on or near the European shores opposite Stambul, between the Golden Horn and the Bosporus.

Pera was until the fire of 1870 the principal seat of the Christian higher classes and of the foreign ministers, and contained churches for the principal Christian denominations, several theatres and concert rooms, four hospitals (English, French, Italian, and German), three post offices (Austrian, French, and Greek), French, German, Greek, and Armenian schools, and a new French college. Gas was introduced in 1858, and telegraphic communication with London completed in the same year. Galata, built by the Genoese, is still enclosed by the old Genoese wall and moat, about 8,000 ft. in circumference. In the centre of the town stands an old round tower, originally intended as a work of defence, but now only used as a watch tower. It is 140 ft. in height, and from its top the finest view of Constantinople and its vicinity can be obtained. Galata is the principal commercial suburb of Constantinople. It is incessantly thronged by a busy crowd of merchants, clerks, carriers, seamen, &c. A merchants' exchange, the customs office, and an Austrian and an English marine hospital are among the prominent buildings. Tophana derives its importance from the large government founderies, the cannon made at which are equal to the best of European manufacture. The red and gilt Turkish clay pipes are also manufactured there on an extensive scale. Kasim Pasha contains the great arsenal and navy yard. Scutari is situated on the opposite Asiatic coast, on the site of the ancient Chrysopolis. An immense number of *kaiks* (small boats) keep up the communication between it and Constantinople. A large business in silk and cotton goods, leather, &c., is carried on there. It contains a great number of khans and warehouses, also a Turkish post office, an imperial palace, and the barracks of the imperial guards. —Constantinople had greatly improved after the conflagrations of 1865 and 1866, when the greater part of Pera was again destroyed by fire, June 5, 1870. A new quarter has since sprung up near the tower of Galata, and the arsenal, which is rapidly filling up with fine buildings, bids fair to eclipse the former advantages of Pera. In place of the old wooden bridge between Stambul and Pera, there is now a new iron floating bridge; while the irksome communication between Pera and Galata, through crooked and steep streets, which made driving impossible and even riding difficult, has been superseded by a pneumatic tunnelled railway; and the great inconvenience to commerce from the absence of good landing places is to be remedied by the establishment of quays on both sides of the harbor. Horse cars run in different parts of the city and the suburbs. The railway to Adrianople was opened in March, 1873, and other railways are in course of construction. The oriental characteristics of the city are, however, not essentially altered by these innovations. Camels, *hamals* (porters), *arabas* (clumsy Turkish carriages), dervishes, turbaned orientals of all descriptions, and veiled women still throng the streets as of old; the bazaars are still picturesque and bustling. The number of foreigners is however increasing, especially the English and Germans. Since the great fire of Pera the neighboring villages have gained in population, especially Therapia and Buyukdere.—Constantinople is the seat of important banking and commercial establishments, and is the great centre of Levantine commerce. In 1870 the number of arrivals was 24,055 sailing vessels, with a tonnage of 5,042,009, and 1,322 steamers, tonnage 1,322,926; the total arrivals in 1871 were 25,686 vessels, tonnage 5,483,818. The local industry, however, is unimportant. The principal articles of manufacture are leather ware, carpets, embroideries in gold, silver, and wool, arms, perfumes, and smoking apparatus of all kinds. In 1873 there were published in Constantinople 19 newspapers issued daily; of these 5 were in Turkish, 5 in Armenian, 4 in French, 3 in Greek, and 2 in English. Besides these there were 34 periodicals in different languages issued tri-weekly, weekly, and at longer intervals.—We have already described the origin and the history of this city down to A. D. 330, when Byzantium became Constantinople. (See Byzantium.) Afterward it was the capital of the Roman, or from 395 the Byzantine empire, and of the ephemeral Latin empire (1204–'61). In A. D. 413 an earthquake destroyed it, when it was rebuilt by Theodosius II. Its size and population under the Byzantine emperors may be judged from the fact that once, in the 8th century, 300,000 of its inhabitants fell victims to a pestilence. In the middle ages Constantinople stood a large number of sieges or assaults by Saracens, Bulgarians, Russians, Turks, and others. (See Byzantine Empire.) On May 29, 1453, it was stormed by the Turks, the last Byzantine emperor, Constantine XIII., losing his life in the defence, and since that time it has remained in their possession undisturbed.

CONSTANTINOPLE, Councils of. **I.** The second general council of the church, convened in 381 by the emperor Theodosius, at the instance of Pope St. Damasus, who approved its acts in a council held in Rome in 382. There were present 150 bishops, all belonging to the eastern churches; the chief object of the convocation being to settle the difficulties consequent upon the long domination of the Arians. The council confirmed the election of St. Gregory Nazianzen, who before the accession of Theodosius had been called to govern the church of Constantinople; and at the same time it deposed the intruder Maximus Cynicus. The acts of this council, besides the reaffirmation of the faith of Nice and the condemnation of the Macedonian and other heresies, were chiefly directed toward regulating the government and discipline of the eastern churches, and prescribing proper forms for the readmission of heretics. **II.** The fifth general council, convened in 553 by the emperor Justinian, for the

purpose of obtaining the solemn condemnation of what is known in church history as the "three chapters," viz.: the person and writings of Theodore, bishop of Mopsuestia; the writings of Theodoret, bishop of Cyrrhus, so far as they favored Nestorianism, or opposed the twelve anathemas of St. Cyril; and an epistle written by Ibas, bishop of Edessa, to one Maris, a Persian, censuring Cyril and the council of Ephesus. Justinian, who was much given to theological disputation, had been induced by the Monophysite Theodore Ascidas, bishop of Cæsarea, and by the empress Theodora, to issue in 546 a decree called "Confession of Faith," condemning these "three subjects" (*κεφάλαια*). As they had been passed on by the council of Chalcedon, Pope Vigilius looked upon this unauthorized proceeding of the emperor as a censure of the council. On his arrival in Constantinople, he excommunicated the empress and Theodore Ascidas, assembled a council of bishops, and published a sentence styled *judicatum*, in which, without pronouncing on the authenticity of the inculpated documents, he condemned their heretical meaning, "without prejudice to the council of Chalcedon." This saving clause incensed the emperor and the Monophysites, and drew upon the pope a cruel persecution which well nigh cost him his life, while the fact of his condemning the "three chapters" roused the indignation of the orthodox and produced a schism. To remedy this evil, the fifth general council was called, the pope barely yielding a reluctant assent, protesting against the partial and irregular way in which the assembly was organized, and refusing to preside over it. The meetings were called conferences. In the third the bishops gave in their adhesion to the four general councils, condemning all that was contrary thereto. In the eighth and last conference they condemned by a formal sentence the texts laid before them, as well as their authors. The pope, who had pledged himself to give his judgment separately, had prepared what is known as his *constitutum*, which was published Feb. 24, 554. While condemning the errors contained in the texts, Vigilius reminded the fathers of the council that they themselves regarded these texts as having been probably interpolated. He refused to condemn the person of Theodore of Mopsuestia, dead a century before, and reproved the animosity manifested toward Theodoret and Ibas, whose orthodoxy had been admitted by the council of Chalcedon. This doctrinal sentence and approbation of Vigilius was ratified by his successors. **III.** The sixth general council met Nov. 7, 680, under Pope Agatho, the emperor Constantine IV. assisting at some of the subsequent sessions. Its object was to condemn the Monothelite heresy, which maintains that in Christ there is but one will. The fathers, after reaffirming the doctrinal decisions of the five general councils, decreed that as in Christ both the divine and the human nature remain unconfused and entire after their union, so each nature performs its own vital operations through its proper faculties, the divine nature through the divine intellect and will, the human nature through its human intellect and will; the human will, however, being ever subject to the divine. The council closed its labors, after 18 sessions, Aug. 16, 681. **IV.** The eighth general council, 869, met in the church of St. Sophia under the presidency of the legates of Pope Adrian II., and in presence of the emperor Basil the Macedonian. Its object was to remedy the evil caused by the usurpation of Photius, who was condemned both for his intrusion and his heretical opinions. Those among his followers who subscribed to the profession of faith proposed by the council were allowed to retain their position in the church; the recusants were excommunicated and deposed. The iconoclasts were also condemned.

CONSTANTIUS. I. Surnamed Chlorus (the Pale), a Roman emperor, father of Constantine the Great, born about A. D. 250, died at York, England, in July, 306. During his short reign the emperor Carus purposed to adopt Constantius, then governor of Dalmatia, in place of his own son, the unworthy Carinus; but his sudden death in 283 prevented the execution of this project. Constantius afterward served with distinction, especially under Diocletian. In 292 the joint emperors Diocletian and Maximian made over a part of the actual exercise of government to their favorite generals, Galerius and Constantius, with the title of Cæsars, obliging each of them to divorce his wife and marry a daughter of one of the emperors. Constantius, who was appointed by Diocletian, received the government of Britain, Gaul, and Spain, his capital being the modern Treves. He defeated the Franks on the lower Rhine, the Alemanni on the upper Rhine, and the usurper Allectus in Britain. He governed with great humanity, and gave special protection to the Christians. In 305, when Diocletian and Maximian abdicated, Constantius and Galerius were proclaimed Augusti, the precedence being assigned to the former. He died while on an expedition against Scotland, 14 years after he was created Cæsar, and 15 months after receiving the title of Augustus. **II.** A Roman emperor, second son of Constantine the Great by his second wife Fausta, born at Sirmium in Pannonia, Aug. 6, 317, died at Mopsocrene in Cilicia, Nov. 3, 361. After the death of Constantine the empire was apportioned between his three sons, Constantius, then 20 years of age, receiving Thrace and the countries of the East, including Egypt. He, however, seized upon Constantinople, which had been assigned to his elder brother Constantine, and put to death two of his uncles and seven of his cousins; but it was soon agreed between the three brothers that Constantinople should be restored to Constantine. He waged a protracted war against the Persians, which prevented him from taking any

part in the struggles between his brothers in the West. Constantine was killed in 340 and Constans in 350. Constantius thereupon marched against Magnentius, who had been proclaimed in Gaul and Italy, and against Vetranio in Illyricum. They offered to compromise by acknowledging him as emperor of the East, with the preëminence in rank. He refused, having been, as he said, directed to do so by a vision of his father, the great Constantine. He offered, however, to acknowledge Vetranio as his colleague and equal, on condition that he would abandon Magnentius. A conference was appointed, but the soldiers of Vetranio deserted him, whereupon he abandoned all his claims, and was assigned an honorable abode at Prusa. Constantius then marched against Magnentius, whom he encountered and defeated in the bloody battle of Mursa (now Eszék) in Pannonia (Sept. 28, 351), and thus became sole emperor. He had in the mean time given the title of Cæsar to his cousin Gallus, and sent him to Antioch to govern the East; but in 354 he caused him to be beheaded, appointed Julian, the brother of Gallus, as Cæsar, and sent him to Gaul, where he waged a successful war against the Alemanni and Franks. Growing jealous of the renown of Julian, he ordered the recall of the legions from Gaul. A revolt ensued, and the troops proclaimed Julian emperor. Constantius moved against him, but died on the way, and Julian, afterward known as "the Apostate," whom it is said he appointed his heir on his deathbed, was peacefully acknowledged by the whole empire. Constantius is known for his zealous endeavors to establish a uniformity of faith throughout the empire. He favored the Arians, expelled Athanasius from Alexandria, persecuted the Catholics and the Novatians, and endeavored to put down pagan rites and ceremonies. **III.** A general of the Roman emperor Honorius, died in 421. He defeated Gerontius and a soldier named Constantine who had revolted and been proclaimed as emperor in Britain in 411; was made consul of Rome in 414 and 417; married Placidia, sister of Honorius, and was proclaimed joint emperor with him in 421, but died seven months after. His son became the emperor Valentinian III.

CONSTELLATIONS, the name given by astronomers to the conventional divisions of the stars. Some of these are very ancient, and would seem to have been based on actual resemblances between certain star groups and the objects with which they were originally associated. But probably the real extent of the ancient constellation figures differed very much from that at present assigned to them. Many of the 48 constellations enumerated by Ptolemy must be regarded as comparatively modern. They are as follows: 12 zodiacal constellations, Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, and Pisces; 20 constellations north of the zodiac, Ursa Major, Ursa Minor, Draco, Cepheus, Boötes, Corona Borealis, Hercules, Lyra, Cygnus, Cassiopeia, Perseus, Auriga, Ophiuchus, Serpens, Sagitta, Delphinus, Equuleus, Pegasus, Andromeda, Triangulum Boreale; and 16 constellations south of the zodiac, Antinous, Cetus, Orion, Eridanus, Lepus, Canis Major, Canis Minor, Argo, Hydra, Crater, Corvus, Centaurus, Lupus, Ara, Corona Australis, and Piscis Australis. To this list Tycho Brahe added one, Coma Berenices; Hevelius added 13 constellations, Bayer 12, Lacaille 14, Royer 5, and Bode, Lemonnier, Poczobut, and others, some score more. Only 36 of these new constellations are, however, admitted into the British association catalogue of stars. The leading stars in the constellations are named by Greek letters, numbers, and so on.

CONSTITUENT ASSEMBLY. See CONSTITUTIONAL CONVENTION.

CONSTITUTIONAL CONVENTION, a term applied to a convention of delegates of the people assembled to frame a constitution for the state, which may or may not be submitted to the people for ratification. When the British American colonies took up arms against the crown, the revolutionary congress which had been chosen as an advisory body assumed the general direction of military and foreign affairs, and continued by common consent to possess it after independence was declared. The extent of its authority, however, was wholly undefined, and it was without the means of enforcing its will except through state action and state officers. The necessity for some clear specification of the congressional powers soon became very urgent, and led to the adoption of the articles of confederation, which were proposed in congress and assented to by the states severally. Those articles, however, did not concede the full measure of authority essential to the vigor and efficiency of the government, the establishment of the public credit, or the preservation of faith with the public creditors; and a convention of delegates from the states was therefore called on the recommendation of congress to propose amendments. This convention met at Philadelphia in May, 1787, and organized by the choice of George Washington as its president. Being satisfied that something beyond mere amendments to the articles of confederation was required, the members proceeded to frame a new constitution, which was completed and agreed upon Sept. 17, 1787, and submitted to a convention of delegates in each state for ratification; it being provided therein that the ratification by nine states should be sufficient for its establishment between the states so ratifying. Favorable action having been obtained in the conventions of eleven states, the government was fully organized and put in operation under the constitution in March, 1789; and the two remaining states signified their assent in due form afterward. The constitution thus adopted contains within itself a provision for the calling of future conventions for amendment

or revision; but none has hitherto been called, the amendments thus far having all been made under another provision, by which congress proposes and the states ratify. The constitutions for the individual states have all been established through similar conventions. When a territory is supposed to possess the proper population for a state, it is customary for congress to pass an enabling act, under which the residents possessing the qualifications prescribed for electors in the act choose delegates to form a constitution, and the instrument agreed upon in this convention is then submitted to the people for adoption or rejection. In some cases these conventions have been called and held without the previous authority of congress; but after a constitution has been framed and adopted, and the state admitted to the Union under it, any irregularity in the incipient steps is cured. The original thirteen states have all adopted constitutions agreed upon in conventions called by legislative authority, and most of these have since been revised in similar conventions. In Connecticut and Rhode Island, however, no constitution was adopted till 1818 and 1842 respectively, the government of those states having continued to be administered under their royal charters. The convention when in session does not exercise the ordinary legislative powers. It is a disputed question whether, when not required by the act under which it is called, or by an existing constitution, to submit the result of its deliberations to the people for their action, the convention is so possessed for the time being of the sovereign power of the state that it may rightfully of its own authority and without such submission put in force a new constitution or any proposed amendments of the old. There are precedents favoring this power, particularly in the case of early conventions in the original states, and during the disorders following in what were called the border states the outbreak of the late civil war; but in many of these cases the bodies assuming this authority were, under the pressure of a supposed great public necessity, exercising ordinary powers of government, and acting rather as revolutionary conventions than as the bodies which meet to revise or form constitutions in peaceful times. Such an exercise of power is not regarded as legitimate; the convention being looked upon in the light of an advisory body, chosen for the one task of maturing a constitution, and possessing no further authority except to submit the instrument agreed upon to the people for their approval.—The corresponding body in France is called a constituent assembly (*assemblée constituante*). Two such are particularly known under the name. The first opened at Versailles May 5, 1789, as the states general, consisting of 291 deputies of the clergy, 270 of the nobles, and 584 of the *tiers état*, or middle class; but on the refusal of the nobles and clergy to sit with the representatives of the *tiers état*, the latter assumed the name of *assemblée nationale*, and began their deliberations. Louis XVI. caused their hall to be closed against them, but they assembled in a tennis court, resolved to continue united until they should have given a constitution to France, and called upon the nobility and clergy to join them. Of the nobles 47, including the duke of Orleans, yielded to the invitation, and then on command of the king the others followed, and the clergy with them. The sessions continued until Sept. 30, 1791. Among the leading members of the body were Mirabeau, Sieyès, Barnave, Cazalès, Dupont, Lafayette, and Lameth. The principal measures of the assembly were: Abolition of all feudal privileges, Aug. 4, 1789; the declaration of rights, Aug. 20; freedom of religion and of the press, Aug. 23 and 24; property of the clergy declared to belong to the nation, Nov. 2; creation of assignats, Dec. 19; division of the kingdom into departments, Jan. 15, 1790; suppression of titles of nobility, June 19; the right of pardon withdrawn from the king, June 5, 1791; the king suspended from his functions until the completion of the constitution, July 15; abolition of orders of chivalry, July 30; constitution finished, Sept. 3; accepted by the king, Sept. 13. The second constituent assembly, consisting of 900 delegates from France and its colonies, elected by universal suffrage after the proclamation of the republic, Feb. 24, 1848, met in Paris, May 4, 1848; was attacked May 15 by an insurrection led by Blanqui, but was successfully defended by a battalion of the national guard; on June 23 appointed Cavaignac dictator to put down a revolt growing out of the dissolution of the national workshops; adopted the constitution Nov. 4; ordered the election of president for Dec. 10, and after the choice of Louis Napoleon to that office held its last meeting, May 24, 1849. Each of these constituent assemblies was succeeded by a national assembly styled *assemblée législative*. The sovereign assembly which succeeded the first *législative* in 1792 is known as the convention. (See CONVENTION.) The present national assembly of France, which also claims constituent rights, was chosen by universal suffrage Feb. 8, 1871, after resistance to the power of the German army had become hopeless, and with a view primarily to a treaty of peace. It convened at Bordeaux, Feb. 12, 1871, and on the 17th appointed Thiers president of the republic. Preliminary articles of peace were ratified March 1, and the fall of the empire decreed. The assembly assumed full powers of sovereignty, which however were denied to it and resisted by the commune of Paris, and the siege and capture of that city became necessary. On March 4 the assembly adjourned its sessions to Versailles, where it convened March 20. The definitive treaty of peace with Germany, signed May 10, was ratified May 18; the gradual disbandment of the national guard was decreed Aug. 24; a formal declaration of the constituent authority of the assembly, which was

still disputed by parties in the nation and by a minority of its members, was decreed Aug. 30, and the power of Thiers as president was prolonged during its continuance. On Nov. 10 the president, who was suspected of monarchical tendencies, formally pronounced for the republic. On Jan. 19, 1872, on a disagreement with the assembly on a question of taxation, the president offered his resignation, but the assembly refused to accept it, and it was withdrawn; but on May 24, 1873, the differences between Thiers and a small majority of the assembly becoming irreconcilable, his resignation was renewed and accepted, and Marshal MacMahon was chosen president.—Constituent assemblies have also been held in some of the Spanish American republics.

CONSUL (Lat. *consulere*, to take care for), in Roman antiquity, the title of two supreme civil and military officers, by whom the republic was governed after the expulsion of the kings about 510 B. C. The office existed during 1,050 years, and assumed distinct phases in the republic and in the Latin and Byzantine empires. The consuls were at first elected annually from the patricians, had all the insignia of royalty except the crown, and were preceded by lictors bearing the symbolic fasces. The only examples of a single consul for part of a year were in 68 and 52 B. C. The plebeians, claiming a right to elect one of the consuls from their own estate, obtained as a compromise in 444 B. C. the election of one of the military tribunes who were invested with consular power. About 366 the Licinian law opened one of the consular offices to them, and in 172 both of the consuls were for the first time plebeians. In the early days of the republic the consuls were the highest judicial as well as executive and military officers, but about 365 B. C. the prætors took the judicial functions. The consuls commanded the army, proposed laws, convoked and presided over the senate and the *comitia centuriata*, and received the communications from proconsuls and from foreign states. They retained their power till Cæsar became master of the republic. The office was immediately degraded under the empire, its duration often being only from two to four months, and its principal functions being transferred to the emperor or senate. In the Byzantine empire it was a merely honorary dignity conferred by nomination of the emperor, its duties being only to assist in splendid costume at a ceremonial on Jan. 1. The number of consuls was in this late period increased, and they were of various classes. Justinian ceased to nominate consuls in A. D. 541; but the office was not legally suppressed till an act of the emperor Leo the Philosopher in 886.—The title of consul was revived for a time in the French republic after the revolution of the 18th Brumaire, 1799. The directory being overthrown, those members of the council of the ancients and the five hundred who favored the revolution appointed three consuls, Sieyès, Bonaparte, and Ducos. By the constitution of the year VIII. (Dec. 13, 1799), this form of executive was confirmed, Bonaparte being made first consul with almost absolute powers, and Cambacérès and Lebrun second and third consuls. The first consul, who was elected at first for ten years, was reëlected in May, 1802, for ten years additional, and in August of the same year for life. He promulgated laws, and appointed and dismissed the ministers and nearly all the officers, military, naval, and civil. His income was fixed at 500,000 francs, and he took up his residence at the Tuileries, where he held court in great splendor. The title was displaced by that of emperor, May 18, 1804.—The term consul designates in modern times commercial agents appointed by a government to reside at seaports or other important commercial towns of foreign countries, whose special commission is to attend to the interests of the citizens of the nation represented by such agents. They were first appointed in the 12th century, after the crusades had opened to European nations a considerable intercourse with the East. Venice, Genoa, and other Italian states obtained a recognition of semi-official agents resident at places with which there was any considerable commercial intercourse. The precedent was followed by other maritime nations, and the custom has become extended so that it is now the practice of all commercial nations to have agents wherever their citizens have established a trade. The powers and duties of consuls are in some cases regulated by treaty between the governments; in other cases there is a mere permission to send an agent, without specification of powers. A consul can do nothing that is not authorized by the government of the country to which he is sent, either by treaty or official permission; but at the present period the nature of the office is so well understood throughout the civilized world, and even by semi-civilized nations and tribes which have any commercial intercourse with other nations, that permission to appoint a consul imports that he is to be at liberty to perform the duties usually belonging to such office, unless specially provided otherwise. The duties of consuls, where they are not specified by positive stipulation between two governments, will depend upon the laws of the country represented by the consul, it being understood that such regulations are within the general scope of official powers acknowledged by the commercial world. Subject to this limitation, every nation may prescribe to its own consuls the extent and nature of their official duties. In some countries consuls are vested with judicial authority to settle disputes between citizens of the country which they represent; but this can only be by consent of the foreign government, and it has not been the practice of the English government, or of our own, to confer such authority upon its consuls, except in semi-civilized countries, as the North African and some of the

Asiatic states, where the laws are so imperfectly administered that the lives and property of foreigners could not be safely left to depend upon them. The ordinary duties of consuls relate merely to commercial affairs, such as the authentication of a ship's papers, receiving and certifying protests of masters of vessels or other persons respecting losses at sea, and giving consular certificates for various purposes. It is also required of consuls to attend to and provide for disabled seamen of the country to which they belong, and to send them home at public expense. They are also expected to take charge of stranded vessels or property belonging to their countrymen, in the absence of the master or other legal representative of the owner, and also to take care of the property of citizens of their respective countries who die within their consulates. In the consular convention between France and the United States of 1788, it was provided that our consuls should have judicial power for the settlement of disputes between the master and his crew in relation to wages or other matters strictly belonging to the interior of the ship. It has also been provided in subsequent treaties with several other European nations that consuls shall have jurisdiction over disputes between masters, officers, and crews of national vessels, while in a foreign port, on questions of wages, shipment, and discharge of seamen. The duties of consuls of the United States are defined in several acts of congress, embracing what has been above specified. Instructions in writing are generally given to them on their appointment. They must be recognized by the authorities of the country to which they are sent, and receive an *exequatur* before entering upon their duties. A consul is not, by the law of nations, entitled to the privileges of a public minister, and is subject to the laws of the country where he resides. In the Turkish dominions consuls enjoy the same immunities as ministers at Constantinople.

CONSUMPTION, in popular acceptation, and as used by physicians, a term denoting certain affections of the lungs, involving in general more or less destruction of these organs, together with progressive emaciation, and in a very large proportion of cases ending fatally. The term has been sometimes used to denote affections of other organs, but its meaning is now restricted as just stated; and although the word pulmonary is often prefixed, this word is understood wherever the term is used alone. The name derives its significance from the consuming effects as regards the lungs, and the wasting of the whole body. Another popular term is "the decline," which has a similar significance. A technical name is *phthisis*, or *phthisis pulmonalis*, the etymological sense of which is the same as consumption. Tuberculous or tubercular disease of the lungs, and pulmonary tuberculosis, are other synonymes, relating to certain characteristic morbid products within the lungs. There are still other designations which late writers have proposed, namely, tuberculous pneumonia, cheesy pneumonia, chronic lobular pneumonia, and catarrhal pneumonia. All these concur in calling the disease a pneumonia, that is, an inflammatory affection of the lungs; and the different words prefixed are intended to distinguish this disease from other forms of pneumonic inflammation. The importance of this disease is evident when its fatality and prevalence are considered. The proportion of recoveries from it is small. It prevails to a greater or less extent in almost every portion of the globe, and if those diseases which prevail as epidemics or endemics be excluded, it occasions a larger proportion of deaths than any other disease. Statistics show that of the population of Great Britain, France, Germany, and Russia, numbering less than 200,000,000, the annual deaths from this disease are about 870,000; and that of the people inhabiting the globe at least 3,000,000 die each year from this disease.—In the great majority of cases consumption is of long duration; it is therefore eminently a chronic affection. There is, however, an affection called acute consumption, acute phthisis, or acute pulmonary tuberculosis, which runs a rapid course. It is always fatal, and the duration may not extend beyond a few weeks, and sometimes death takes place within a few days from the first manifestations of disease. This affection is extremely rare. Prominent symptoms are rapid breathing, distress from a sense of the want of breath (dyspnœa), a livid coloration of the lips and face, together with more or less cough and expectoration. With these symptoms are associated high fever, as denoted by the pulse and the temperature of the body, great prostration, loss of appetite, and progressive exhaustion. After death the lungs are found filled with small round bodies which, from their resemblance in size to millet seeds, are commonly known as miliary tubercles. Other names are gray tubercles and semi-transparent granulations. The latter name is applicable to them only at an early period after their production. In a short time they become opaque and comparatively of soft consistence. Some pathologists of late propose to limit the term tubercles to these bodies, and consider that their presence is essential in order to constitute a truly tuberculous affection. Consumption in its ordinary form, that is, as a chronic affection (the sense in which the term will be used in the remainder of this article), is distinguished by other and widely different changes found after death. Generally the lungs contain cavities more or less numerous and varying in size, called by the older writers *vomicæ*. These are irregular in shape, and frequently they communicate with each other. Of course they involve an amount of destruction of the pulmonary structure proportional to their number and size. In addition to cavities, usually portions of the lungs are found to be solidified by the presence of a

morbid product which has been known as yellow and crude tubercle, or tuberculous infiltration. This is now generally regarded as an inflammatory product, and hence the propriety of calling the affection a form of pneumonia. The point of departure of the process of inflammation which occasions this product is supposed to be the membrane lining the air cells of the minute bronchial tubes. This product undergoes a cheesy degeneration, so called because it has the consistence of cheese. At length it softens so as to become changed into a thick liquid resembling purulent matter or pus. Ulceration then takes place, the liquefied product is discharged into the bronchial tubes, and it forms a certain proportion of the matter which is expectorated, leaving cavities. As a rare exception to the general rule, the discharge takes place into the pleural cavity, giving rise to a perforation of the lung, and as a consequence to the affection known as pneumohydrothorax. In most cases, after death from consumption, the several stages of the characteristic changes in the lungs are associated, because different portions of the organs are affected at successive periods of time. It is a law of the disease, to which there are occasional exceptions, that the upper part of one lung is first affected; but shortly afterward the upper part of the other is invaded; the affection then extends downward after variable intervals. Hence it is that often different sections of the lungs represent the series of changes which have taken place. In addition to the changes just noticed, in most cases miliary tubercles are found, being sometimes few in number and sometimes abundant. There is evidently some pathological connection between these tubercles and the other changes; but, as regards this connection, the views of different pathologists differ; some considering the tubercles as preceding and giving rise to the other changes, and some regarding the latter as primary, and standing in a causative relation to the former. Further morbid changes generally found on post-mortem examinations are those denoting pleurisy. As a rule, affected portions of the lungs are adherent to the walls of the chest, this being a result of circumscribed pleuritic inflammation; and in some cases the pleurisy gives rise to an effusion of liquid in greater or less quantity between the pleural surfaces, in other words within the cavity of the pleura.—The disease in the majority of cases is developed slowly and often almost imperceptibly. Usually cough is the primary pulmonary symptom. It is at first slight and dry, after a variable period becoming more marked and accompanied by expectoration. The early cough and expectoration represent a circumscribed bronchitis. As the disease progresses, the expectoration becomes abundant, consisting of mucous secretions, the liquefied tuberculous product, and purulent matter. Spitting of blood (*hæmoptysis*) is sometimes the first symptom pointing to the pulmonary affection. This symptom in some cases precedes the cough, and perhaps occurs when the health is apparently perfect. It is absent in a minority of the cases of consumption, and is apt to occur repeatedly, and in some cases a great number of times at variable intervals. The quantity of blood expectorated varies, being sometimes small and sometimes profuse. In some very rare instances the loss of blood is the immediate cause of death. In general, however, there is no danger from the hæmorrhage, and, so far as its apparent effect upon the progress of the disease is concerned, it is favorable. Statistics show that out of a considerable number of cases, the disease is non-progressive, or progresses slowly, in those in which the spitting of blood is frequent and profuse. Pain in the chest is not infrequently entirely wanting, and it is seldom a prominent symptom. The pulmonary affection in itself occasions no pain; when it occurs it is due to the pleurisy which is developed as a complication of the affection of the lungs. The pain which denotes pleuritic inflammation is short and stitch-like, and is referred by the patient to the upper part of the chest, or beneath the shoulder blade. Pain of this description occurring at intervals denotes successive attacks of circumscribed pleurisy; the pain, however, is rarely sufficient to occasion much inconvenience. The frequency of respiration is in proportion to the extent of the pulmonary affection, and the breathing becomes panting on exercise; but it is not common for patients to suffer greatly from a sense of the want of breath. With these symptoms referable to the chest are associated symptoms which it is customary to distinguish as constitutional. The pulse is more or less accelerated, and the heat of the body, as determined by the thermometer, increased. These constitutional symptoms are marked in proportion as the disease is actively advancing. Paroxysms of hectic fever occur daily in the afternoon, often commencing with a chill, and generally ending with profuse perspiration. Perspirations are of frequent occurrence without being preceded by marked febrile paroxysms, especially during sleep, whence they are known as night sweats. Chills also, or chilly sensations, are not infrequent without being followed by fever and sweating. Sooner or later the appetite fails, and there is sometimes an invincible repugnance to food. The digestion is sometimes disordered, but in many cases the food which is taken occasions no ailments referable to the stomach. As the pulmonary disease advances, there is progressive reduction of the weight of the body, ending at length in notable and sometimes extreme emaciation; and the muscular strength proportionally decreases. In females the menses diminish and at length cease. Diarrhœa is sometimes a prominent symptom, and occurring in a late period, it has been called, from the exhaustion which it occasions, colliquative diarrhœa. The ends of the fingers sometimes become enlarged or bulbous, forming the "clubbed

fingers" which are quite characteristic of this disease, although they are occasionally observed in other affections. Dropsical swelling of the feet and lower limbs is a symptom belonging to a late period of the disease. It is a remarkable fact that the mental faculties usually remain intact, with the exception that the effect of the disease upon the mind is such as often to impair the ability to appreciate the fact of the existence of a serious affection. Patients frequently, even when the disease is far advanced, entertain confident expectations of recovery. They may refuse to believe that there is any danger, and perhaps are forming plans which involve prolonged life and health when it is evident to all around them that they are on the verge of the grave. The duration of the disease in fatal cases is extremely variable. In some exceptional instances it runs a comparatively rapid course, ending in a few weeks. In such cases it has been called "galloping consumption." It rarely ends within a period of three months; it is by no means uncommon for it to extend to two or three years; and it not very infrequently lasts from 10 to 20 years. The writer has known an instance in which the disease existed for 40 years, proving fatal at the end of this period.—The diagnosis of consumption is now, with the aid of indications furnished by auscultation and percussion, made with facility and positiveness. It may be diagnosticated at an early period, before it has made much progress. Moreover, the extent to which the lungs are affected and the amount of lesion are determined with great precision. The symptoms belonging to the clinical history which are especially diagnostic, in addition to a persistent cough with more or less expectoration, are spitting of blood, stitch-like pains at the summit of the chest, irregularly recurring chills, a frequent pulse, rise of the temperature of the body, an increase of the number of respirations per minute, perspiration during sleep, febrile exacerbations or hectic paroxysms, and progressive emaciation. The signs obtained by auscultation and percussion are those which represent the morbid physical conditions incident to the disease, namely, solidification of portions of the lungs, the presence of liquid in the air tubes, roughening of the pleural surfaces with lymph, and the existence of cavities. Certain complications are significant as regards the diagnosis, such as chronic laryngitis, giving rise to huskiness and not infrequently loss of voice; tuberculous ulcerations of the intestines, causing persistent diarrhœa; perineal fistula, and chronic inflammation of the peritoneum. On the other hand, there are certain affections which appear to exert a protective influence against consumption. The disease is rarely developed in those who suffer from asthma, pulmonary emphysema, and the structural affections of the heart which produce notable disturbance of the circulation.—Our knowledge of the causes of consumption is still obscure. The popular belief is that the disease is caused by "taking cold," that is, follows a bronchitis. The study of a large number of cases fails in furnishing support for this belief. It is quite certain that a cold, whenever it appears to enter into the causation, acts only as an exciting cause, and is not sufficient in itself to produce the disease. Nor does the disease often follow acute inflammation of the lungs or pneumonia. This statement also applies to pleurisy. Statistics have shown that those who have contracted chests are not in consequence more liable to become consumptive. A hereditary influence undoubtedly enters often into the causation, persons whose parents or grandparents have been tuberculous being more likely to die of consumption than others. Moreover, facts show that sometimes, when progenitors have not been tuberculous, there is an innate constitutional tendency to consumption. As an illustration of this statement, the following may be cited: Five children of parents who were living and well died with consumption on arriving at ages of from 22 to 24; they were all the children of these parents, and none of the progenitors of the latter had been known to die with consumption. Here must have been a congenital tendency, and there is no evidence that this tendency was inherited. A predisposition relates to age. In the great majority of cases the disease is developed between the ages of 20 and 30 years; no age, however, is exempt from a liability to it. Climate has a manifest influence. Consumption prevails much more in climates which are humid and subject to frequent alternations of cold and heat, than in those which are dry and uniformly either warm or cold. Prof. Bowditch has ascertained that in the state of Massachusetts cases of consumption are especially numerous in situations in which the atmosphere is rendered humid by streams or marshes. A high altitude affords protection against the disease. A French writer, Jaccoud, states that observations for 15 consecutive years warrant him in asserting that in Alpine situations elevated 4,000 feet tuberculosis is almost unknown; and Dr. Hjaltelin, who resides in Iceland, affirms that the inhabitants of that country enjoy exemption from consumption. Statistics prove that the disease prevails especially among persons whose occupations involve a sedentary life and confinement within doors, such as clerks and printers. A conclusion to be deduced from what is known of the causation is, that causative agencies exert their influence by producing a constitutional deterioration, the essential nature of which is unknown. This condition, when it constitutes a predisposition to consumption, is called the tuberculous diathesis, and when sufficient to give rise to the disease it is called the tuberculous cachexy. An interesting and important discovery bearing on the causation of tuberculous disease was made in France in 1865, by Villemin. He demonstrated by a series of ex-

periments that tuberculous disease may be communicated by inoculation from man to certain animals, namely, rabbits and guinea pigs. These experiments have been repeated with the same result by others. It appears, however, that inoculation with morbid matter other than that from the tuberculous products is also followed by the development of tubercle. Were it true, as asserted by Villemin, that tuberculous products only are capable of producing the disease by inoculation, and that therefore these products must contain a specific morbid material of the nature of a virus, the fact would lend strong support to the opinion that consumption is to be reckoned among the contagious diseases. This opinion has been heretofore held by some, being based on instances of persons who live in close companionship, especially as husband and wife, becoming successively affected. The study of a large number of cases with reference to this point, however, affords but little evidence of the disease being communicable.—Consumption ends fatally in the great majority of cases. This well known fact leads to an underestimate of the number of cases in which recovery takes place. Cases are not extremely infrequent in which the progress of tuberculous disease ceases before the lungs have become greatly damaged. The traces of an old tuberculous affection are not very uncommon in bodies examined after death from other and various diseases. This arrest of the progress of the disease sometimes takes place spontaneously, that is, under circumstances which seem to denote an inherent tendency to recovery. Small tubercles in the lungs may undergo the calcareous degeneration; the organic matter which they contain is absorbed, leaving the mineral portion, and in this form they may be expectorated. These so-called "obsolete tubercles," or pulmonary calculi, sometimes expectorated in great numbers, are thus evidence that there has existed a tuberculous affection which, instead of progressing, has undergone retrogression. There is reason to believe that a small amount of tuberculous products may be entirely absorbed. But even when the tuberculous affection is considerable, and has advanced to the formation of cavities, recovery is by no means impossible. If fresh tuberculous products do not take place, in other words, if the tuberculous cachexy no longer continue, the cavities may cicatrize; and patients recover with a certain amount of permanent injury which, as the quantity of lung in health is greater than is required in ordinary breathing, is only felt when there is an unusual demand for the respiratory function, as in taking active exercise. Even if recovery do not take place, tuberculous cavities sometimes remain almost or quite innocuous, and under these circumstances the affection is so far mitigated that life and comfortable health may be maintained for an indefinite period.—There are no known specific remedies for the cure of consumption. This is not saying that medicines are not often useful. At the present time the remedies which are in vogue, and which in certain cases are more or less serviceable, although having no specific virtue, are the various vegetable and mineral tonics, the hypophosphites, arsenic, and cod-liver oil. The latter is perhaps a food rather than a medicine. But measures relating to diet, regimen, and climate, and other sources of hygienic influence, are vastly more important than any medicaments. The great object of treatment is the removal of the constitutional condition of which the pulmonary affection is the local expression; that is, the tuberculous cachexy. With reference to this object, all available means of strengthening and invigorating the system are to be employed. The diet should be as abundant and as nutritious as possible, embracing fatty articles of food in as large a proportion as the appetite and digestion will allow. Living out of doors as much as possible is an important part of the hygienic treatment. The writer is cognizant of several cases in which persons in advanced consumption recovered after adopting a savage life, that is, roughing it and living in the open air. Long voyages are often useful, and sometimes seem to effect a cure, instances of which have repeatedly come under the writer's observation. On the other hand, the disease sometimes pursues a favorable course under hygienic circumstances which would not be considered as conducive to this end. This statement will apply to some hospital cases. Unquestionably climatic influences are often useful, and a change from an unfavorable to a favorable climate is sometimes apparently instrumental in effecting a cure. That such a change is not curative in the majority of cases does not militate against this statement, for consumption will end fatally in a very large proportion of cases in spite of all the measures which, with our present knowledge, can be brought to bear upon the patient. If a change of climate be made, the desirable qualities of that to be selected are dryness, uniformity, elevation, and the absence of malaria. A dry, uniform, cold climate is suitable for some cases, and for others one which is dry and warm is more favorable. It is not always easy in particular cases to decide whether it is best to choose a warm or a cold climate. Perhaps the best criterion is the previous experience of the patient as to the influence upon health and vigor of the summer or the winter season. In making a change of climate, various circumstances are to be considered, such as the resources for occupation and recreation which different places offer, the feelings of the patient with respect to absence from home and separation from friends, the supply of the proper articles of diet, and the influence of associations. With reference to the latter, the moral effect of going to a place in which consumptive patients congregate is often unfavorable. As a rule, consumptive

persons should not be encouraged to deprive themselves of the comforts of home whenever the symptoms are such as to preclude a reasonable expectation of benefit. Another important rule is, that if notable benefit be derived from a change of climate, the patient should not hasten to return, and it is desirable that the change be permanent. Various details which cannot here be fully considered enter into the hygienic management. The body should be well protected against changes of temperature, but an excess of clothing is to be avoided. Consumptive persons are not more likely to "take cold" than persons in health, and in general colds do not have a pernicious influence on the progress of the tuberculous affection. Sponging the body with cold water daily, followed by brisk rubbing with a dry towel, is generally useful. The use of alcoholic stimulants, wine, spirits, or malt liquors, the choice being determined by the taste and experience of the patient, is often signally beneficial. As to the expectation of their utility in particular cases, the immediate effects are to be relied upon. In so far as they have a cordial effect, without producing upon the circulation and nervous system those effects which are understood by the term stimulation, they will be likely to be useful; and some consumptive patients are able to take the so-called alcoholic stimulants without those effects, in quantities which in health would cause intoxication. Taken under the restriction just stated, there is little or no danger of patients becoming addicted to their use. This, however, affords no warrant for their use with this object in view, except in well marked and undoubted cases of the disease. Finally, it is to be remarked that, treated after the plan which has been sketched, consumption is not fatal in so large a proportion of cases as formerly, when bleeding, cathartics, severe counter-irritation, restricted diet, and confinement within doors constituted the measures of treatment. A striking change is also manifest as regards the longer duration of the disease, and the maintenance of strength up to a short period before death in the cases which end fatally. It is an important consideration that the measures of treatment now generally pursued, when they do not effect a cure, promote a better tolerance of the disease, prolonging life, and contributing to the comfort of the patient while life continues.

CONTAGION (Lat. *contagio*, from *con*, together, and *tangere*, to touch), primarily, the propagation of disease by contact. It is scarcely distinguished in usage, even by medical writers, from infection, which designates the communication of disease by effluvia through the air. The contagious matter is the subtle, poisonous particles which diffuse themselves through the atmosphere, or attach themselves to various substances, as clothing and furniture. Concentrated in wool or fur, they retain their power of originating disease after being carried to a great distance. Among diseases propagated by immediate contagion, or direct application of the contagious matter, are syphilis, cowpox, purulent ophthalmia, and several others; among those communicated by remote contagion, or infection, are smallpox, measles, scarlet fever, mumps, and whooping cough. (See Epidemic Diseases.)

CONTARINI, a Venetian family, which counted eight doges among its members, and a large number of other persons of distinction. **I. Andrea,** doge from 1367 to 1382. The Genoese under Pietro Doria conquered Chiozza in 1379, and even threatened Venice. Andrea, then about 80 years of age, took command of the fleet, reconquered Chiozza (1380), and freed the republic from its enemies. He refused the dignity of doge when first elected, but was obliged to assume it in order to avoid being treated as a rebel. **II. Ambrogio,** a Venetian ambassador, wrote an interesting account of his journey and mission to Persia in 1473 (*Itinerario nell' anno* 1473 *ad Usun Cassan, Rè di Persia*, Venice, 1487). **III. Giovanni,** a painter, whose style was formed on that of Titian, born in 1549, died in 1605. He visited Germany, where he remained for some time, and was knighted by the emperor Rudolph II. His greatest work is a "Resurrection," in the church of San Francesco di Paola in Venice.

CONTEMPT, a disregard of the authority of a judicial tribunal or a legislative body, for which the offending party is liable to punishment by summary order, without the ordinary forms of criminal proceedings. A contempt may be either direct, as by refusal to obey an order of a court, or constructive, as when officers of a court are guilty of any corrupt conduct, abuse of process, or culpable neglect of duty. Instances of the former are when inferior magistrates or judges disobey writs issuing from superior courts, as by proceeding in a cause after it is stayed or removed by writ of prohibition, certiorari, supersedeas, and the like, or by refusal or neglect to obey some requisition made by writ of mandamus. So when parties to any suit or proceeding disobey any order made in such suit or proceeding. Thus, non-payment of costs which the court have adjudged to be paid, or the neglect to do any specific act, as to perform an award of arbitrators when the submission to the determination of such arbitrators has been made a rule of court, is held to be a contempt, for which process of attachment will be issued; but in these and the like cases the attachment is to be regarded as a civil remedy for the benefit of one party against another, rather than as criminal process for the vindication of the authority of the court; and the right to issue attachments in these cases is now restrained within narrow limits. Under the head of constructive contempts may be specified: 1. Misconduct of sheriffs and other ministerial officers by oppression, extortion, or any abuse of process placed in their hands, as

in the execution of such process they are considered the officers of the court from which it issued, and therefore directly amenable to it. 2. Fraud or malpractice of attorneys, solicitors, &c. Fair dealing between them and their clients will be enforced upon summary application. Non-payment of money collected by an attorney or solicitor will subject him to process of attachment. So when any improper advantage has been taken of a client, it will be treated as a contempt, and relief granted upon motion. The ground upon which courts interfere in such cases is the confidential relation between attorney and client, and the disrepute which would attach to the courts themselves if any want of integrity should be tolerated in their officers. In other cases courts will punish attorneys and other officers for a breach of any prescribed duty, even when there has been no private injury. Thus, a master in chancery has been adjudged guilty of a contempt in carrying on a suit in the name of another solicitor contrary to statute. (See Yates's case, 4 Johnson's Rep., 317; 6 id., 337; 9 id., 395.) So if a private person brings a suit in the name of another person without his consent or privity, it is a contempt. (2 Johnson's Rep., 291.) For any disorderly conduct in court, summary punishment may be inflicted; in other cases an attachment issues for the arrest of the offending party, and when brought in he is usually required to answer written interrogatories. If the commission of the offence is not admitted, further proof may be taken by affidavits. Upon the admission or proof of the offence, the court adjudges the party in contempt, and may prescribe punishment in its discretion, which may be either fine or imprisonment, or both. The publication in a newspaper of an article calculated to impair the respect and authority of the court has sometimes been punished as a contempt; but it is generally considered that in doing this a court occupies somewhat dangerous and doubtful ground. It is nevertheless permitted in some of the United States by statute or constitution.—The power in legislative bodies to punish contempts is analogous to that possessed by courts, and is exercised to punish disorders in their presence or which are calculated to impede their free action, to compel obedience to their proper process or that of their committees, to protect their members against unlawful arrests, &c. (6 Wheaton's Rep., 204; 14 Gray's Rep., 226; 37 New Hampshire Rep., 450.) The courts cannot review legislative decisions in cases of contempt; but where imprisonment is imposed as a punishment, it must terminate with the session of the body imposing it; and if the party is not then released, it may be done on habeas corpus.

CONTI, Princes de, a junior branch of the Condé family of France, originating from Conti or Conty, a village near Amiens. François de Bourbon, who died childless in 1614, and who was a son of the first prince of Condé, was the first to assume the title. The following are the most prominent members of the family. **I. Louise Marguerite de Lorraine,** princess de, wife of the preceding, born about 1577, died at Eu, April 30, 1631. She was a daughter of the duke Henri de Guise, *le Balafré* (the scarred), and of Catharine of Cleves, and is said to have attracted the attention of Henry IV., and to have been supplanted in his affection by Gabrielle d'Estrées. She married the prince de Conti in 1605. The only child by him dying soon after birth, she is said to have had a child by Bassompierre. She was one of the most dissolute, brilliant, influential princesses of her day, and spent the end of her life at Eu, for having given umbrage to Richelieu by her devotion to Maria de' Medici, to whom she remained faithful in adversity. She is considered the author of *Les aventures de la cour de Perse, où, sous des noms étrangers, sont racontées plusieurs histoires d'amour et de guerre arrivées de notre temps* (Paris, 1629), as well as of the *Histoire des amours du grand Alcandre* (Henry IV.), published in 1652, in which she figures under the name of Milagarde. **II. Armand de Bourbon,** regarded as the chief of the Conti family, born in Paris in 1629, died in 1666. He was a son of Henry II. de Bourbon and Charlotte de Montmorency, a younger brother of the great Condé, and godson of Richelieu. He was of feeble constitution, though of fine figure, and was destined for the church, being early provided with several rich benefices. But his love of pleasure and active life, together with the influence of his sister the duchess de Longueville, toward whom he was said to entertain more than a brotherly affection, led him to abandon theology, and to engage in the war of the Fronde against the court. After a short imprisonment he went over to the opposite side, married a niece of Mazarin, became governor of Guienne, and commanded armies in Spain (1655) and Italy (1657). Like his sister, he became devout in the latter part of his life, and wrote religious treatises. **III. Louis Armand de Bourbon,** elder son of the preceding, born in 1661, died at Fontainebleau in 1685. He was dissolute and brilliant like his father, and distinguished himself with Prince Eugene and others against the Turks. Louis XIV. banished him from court for having engaged in this warfare in spite of his prohibition, but subsequently pardoned him. His wife, Mlle. de Blois, a daughter of Louis XIV. and Mme. de la Vallière, was remarkable for her beauty and accomplishments. **IV. François Louis de Bourbon,** brother of the preceding, born in Paris in 1664, died in 1709. After the death of his brother, with whom he had fought in Hungary against the Turks, he exchanged the title of prince de la Roche-sur-Yon for that of Conti. He was banished to Chantilly, Louis XIV. bearing him a grudge for having characterized him as a stage king in the drawing room, and a chess king on the battlefield. The great Condé on his deathbed ob-

tained the pardon of his nephew, who soon distinguished himself in the field, especially at the battle of Neerwinden (1693), where he was wounded. He was elected king of Poland by a part of the nobles in 1697, but his rival Augustus of Saxony had seized the throne before he reached that kingdom, and he returned to France. In 1709 he was appointed commander-in-chief of the French army, but died at the moment of his departure for Flanders. He has been extolled by Saint-Simon and others as the hero of the Conti family. **V. Louis François de Bourbon,** grandson of the preceding, born in 1717, died in 1776. He displayed courage and skill in Piedmont, especially at the battle of Coni (1744), and in Flanders (1746). **VI. Louis François Joseph de Bourbon,** only son of the preceding, born in 1734, died in Barcelona in 1814. He bore for a long time the title of count de la Marche, and was for some time in the army. He was one of the first of the princes to leave France in 1789, after having protested against the revolution, but gave his allegiance to it on his unexpected return to Paris in 1790. He was under arrest in Marseilles, together with his cousins, the Orleans princes, from 1793 to 1795; after which he was expelled from French territory by the directory, and fled to Barcelona. He was the last prince of the house of Conti.

CONTINENTAL SYSTEM, the scheme of Napoleon I. for excluding Great Britain from commercial intercourse with the continent of Europe, and compelling her to acknowledge the maritime law established at the peace of Utrecht. By the Berlin decree of Nov. 21, 1806, the ports of France and its allied states were to be closed against all vessels coming from England or from English colonies; all commerce and correspondence prohibited; all English goods and merchandise seized; and every English subject found in the countries occupied by the French or their allies made a prisoner of war. The retaliatory measures adopted by the English government caused Napoleon to make the blockade still more stringent. The British retaliated by an order in council, Jan. 7, 1807, which prohibited neutral vessels from entering the ports of France under pain of confiscation; and a second order in council, Nov. 11, 1807, placed the harbors of France and her allies, and of all countries with which Great Britain was at war, under the same restrictions. Napoleon, by a decree issued at Milan, Dec. 17, 1807, and another, from the Tuileries, Jan. 11, 1808, declared that any vessel which had been searched by an English ship, had been sent on a voyage to England, or had paid duty to the British government, should be treated as British, and become lawful prize of war. On Aug. 3, 1810, the tariff of Trianon for colonial goods was established, followed by the decree of Fontainebleau, Oct. 18, 1810, ordering the burning of all British goods. Denmark, Russia, Austria, and Sweden were successively forced to join this hostile league against Great Britain; so that, with very few exceptions, all the ports of Europe were closed against British vessels. Though it was impossible to enforce such a system with any completeness, Napoleon refused to give it up, and his declaration of war against Russia in 1812 was chiefly occasioned by his indignation at seeing the ports of that empire reopened to English commerce. The system was finally abandoned only with the fall of the French emperor in 1814.

CONTRABAND (law Lat. *contra* and *bannum*, contrary to an edict, proclamation, or treaty), a term used to designate goods exported from or imported into a country in violation of its laws. Contraband of war, in international law, applies to goods which neutrals are prohibited from carrying during war to either of the belligerent parties. Whatever is directly of use for war, and for that only, as arms and ammunition, would of course be contraband; but articles which may be of use either in peace or war will be subject to a varying rule according to the existing circumstances. Thus, provisions may ordinarily be carried by a neutral to a belligerent without being deemed contraband; yet, in the case of a blockade of a town with the expectation of reducing it by famine, a neutral could not lawfully furnish provisions to the besieged party, as it would be giving means of assistance against one of the legitimate operations of war. Naval stores and materials for building or furnishing vessels of war are contraband by the modern law of nations; formerly they were so regarded only in a naval war, but at the present day, naval operations being more or less incident to every war, the rule has become general that the furnishing such materials to a belligerent is unlawful. It has been a question whether, if the materials are not exclusively applicable to the building or furnishing of war vessels, they would necessarily be contraband. It has been held in the English admiralty courts that they would be; but in the French council of prizes it was decided in 1807 that ordinary ship timber, adapted to the building of merchant vessels as well as vessels of war, carried to an enemy's port, was not *per se* to be deemed contraband. In the war between England and France which commenced near the close of the last century, it was attempted by both nations to enforce a stricter rule against neutral powers than had been maintained before that time by any nation of modern Europe. The national convention of France in 1793 decreed that neutral vessels laden with provisions, destined to an enemy's port, should be seized and carried to France, which was followed by an order of the English government to detain all neutral vessels bound for France having corn, meal, or flour, on board. The ground upon which England justified this detention was, that the depriving the enemy of the supplies necessary for her population was one of the means relied upon

for reducing her to accept reasonable terms of peace; and that, under this plan of operations, all provisions destined for any port of France were contraband. This claim was resisted by the government of the United States, who insisted that provisions were never contraband, except when destined to a place which was actually invested. The courts of the United States have, however, since that time admitted that provisions intended for the use of the army or navy of the enemy, or destined to his posts of military or naval equipment, should be deemed contraband; and the decisions in the English admiralty courts substantially limit the rule as to provisions being contraband to the cases above specified; so that the courts of both countries are in conformity with each other, and the claim made by the English government in 1793 seems to be abandoned, or at all events is not likely ever to be reasserted, unless in a contest as desperate as that in which she was then engaged. Confiscation is the penalty upon seizure of contraband goods, except in the case of provisions, as to which the practice has been substituted of taking them at a reasonable price instead of enforcing forfeiture. It is understood that confiscation of the goods is not a just ground of complaint on the part of the neutral power, and is not the subject of reclamation. So, on the other hand, the neutral power is not chargeable with a breach of neutrality if it allows its subjects to carry contraband goods to a belligerent. The risk of seizure and confiscation is deemed a sufficient penalty.

CONTRA COSTA, a W. county of California, bounded N. by the strait of Carquinez, Suisun bay, and the San Joaquin river, E. by the San Joaquin, W. by the bay of San Francisco, and N. W. by San Pablo bay; area, 756 sq. m.; pop. in 1870, 8,461, of whom 160 were Chinese. There are mountains in the southern part, the most considerable of which is Mt. Diablo, but the surface in other portions is generally level. The soil is fertile and productive. There are numerous salt and sulphur springs. Limestone is abundant; gypsum has been discovered; and there are quarries of red freestone and building stone of excellent quality. Valuable mines of coal have recently been opened in Mt. Diablo, and are now extensively worked. Copper and quicksilver are found. There are railroads from the coal mines to San Pablo bay. The chief productions in 1870 were 925,054 bushels of wheat, 67,025 of oats, 358,350 of barley, 18,658 tons of hay, 64,890 lbs. of cheese, 153,936 of butter, 58,800 of wool, and 10,330 gallons of wine. There were 7,033 horses, 5,366 milch cows, 9,854 other cattle, 2,556 sheep, and 7,679 swine; 4 grist mills, 5 manufactories of saddles and harness, and 1 of agricultural implements. Capital, Martinez.

CONTRACT (Lat. *contrahere*, to draw together). As its derivation denotes, a contract is a concurrence of the minds of two or more parties in reference to something to be done by one or both, and imports mutuality; that is to say, each of the contracting parties may undertake the performance of something for the benefit of the other, or one may promise to do a certain thing in consideration of what is done by the other at the time of the making of such promise, or has been previously done. Contracts may be either in express terms or implied from the acts of the parties; they may also be verbal or in writing, and at common law both forms are equally obligatory; but by statute in England and in the United States it is required that a promise shall be in writing, and signed by the party to be charged—1, when it is not to be performed within one year from the making thereof; 2, when it is to answer for the debt or default of another person; 3, when it is made in consideration of marriage, except mutual promises to marry; 4, in cases of sales of goods beyond a certain amount or value (in this country usually $50), unless there was delivery of part, or payment in part; 5, when the contract is for the sale of lands or some interest in lands, or leasing for a longer period than one year. In all these cases it is also required that the consideration shall be expressed in the writing containing the contract. An instrument under seal was at common law subject to certain legal incidents, essentially differing from those belonging to other contracts. The promise in such case is called a covenant; no consideration was required to be expressed, nor in an action brought upon such an instrument could the want of a consideration be set up as a defence, the seal being deemed of such weighty import that a consideration was presumed. The doctrine of the common law in relation to sealed instruments is peculiar, indeed may be called *sui generis*. Originally the seal was used in place of the signature, many being unable to write their names. Usually the seal had something to distinguish it, so that to some extent it could be identified; coats of arms were introduced as the devices of seals during the crusades, when it was the custom to put such devices upon the shields of knights. At that time the sealing of a deed was a sufficient execution, and the form of attestation, viz., "sealed and delivered," without mentioning the signing, has continued even to the present time, notwithstanding the statute above mentioned requiring deeds to be signed (which statute was passed in the reign of Charles II.). But after the signature became necessary, and which, as we should have supposed, would have superseded the use of the seal, the old custom of sealing still continued, and, what was more singular, had the same legal consequence as a formality. There might have been some reason for this as respected those who maintained the use of their own individual devices upon their seals; but as to the great mass of the people, the supposition of each man having his private seal was an absurd fiction, and accordingly a common stamp, with-

out any device at all, could be used for making an impression. It was required at common law that there should be an impression upon some soft substance, usually wax, which was affixed to the deed which it authenticated. The definition of a seal by Coke was: *Sigillum est cera impressa;* the wax alone without an impression would not be a seal, but it mattered not what was impressed. It became usual, especially in this country, to substitute small slips of paper for seals, which were attached by wax or wafers to the deed. While the paper was moist, an impression could be made that would be perceptible, but, as before remarked, the impression itself had nothing distinctive; hence in some of the states it has been altogether dispensed with, and a mere scroll or flourish with the pen substituted in place thereof. This would seem to be, in fact, abolishing the use of a seal as a distinct formality; yet, in all the modes of sealing, whether by wax, paper, or scroll, the legal effect has remained the same. In some states it has been provided by statute that the want of consideration may be proved in avoidance of a sealed instrument; but other incidents of sealed instruments are still in force, the most important of which is, that a longer time is allowed for bringing an action thereon, usually 20 or 10 years instead of 6, which is allowed in case of simple contracts.—The essential rules in respect to contracts are: 1, that the parties must be legally competent to make a contract; 2, there must be a sufficient consideration; 3, the contract itself, or what is agreed to be done, must be lawful; 4, in determining the legal effect of some contracts, it sometimes becomes necessary to refer to the laws of other countries, as if the contract was made or to be executed abroad, and this involves the application of rules derived from the *lex loci*, or law of the domicile, on the one hand, and the *lex fori* or *rei sitæ*, the law of the place where the subject of the contract is situated, or with reference to which the contract is supposed to have been made, on the other. 1. As to the competency of the contracting parties, it is a universal rule that there must be sufficient age, understanding, and freedom of will. The age at which contracts may be made is different in different countries. By the English and American law the age of 21 years is the time fixed for full legal ability to contract. All persons under that age are called infants, and are under disability to bind themselves except in certain specified cases. Among these is the right to make a contract of marriage, which by common law is allowed to males at the age of 14, and to females at the age of 12; by this is to be understood a contract *in præsenti*, for a promise of marriage to take effect in future is subject to the same rule as other contracts. In France the age of consent to marriage was made by the Napoleon code 18 for males and 15 for females. Another of the excepted cases is a contract by an infant for necessaries, such as clothing, food, medical aid, &c.; but he is bound only for what these necessaries are really worth, and not by any agreement he may make for a price beyond that. If, however, the infant is living with a father or guardian who provides for him, he cannot bind himself even for necessaries. So he may bind himself as an apprentice; may make a testament of chattels, if a male, at the age of 14, if a female, at the age of 12; and may be an executor at the age of 17; but these subjects are now covered by statutes. A married woman is by the common law incompetent to make contracts; but by statute in several of the states she may convey or devise her real and personal estate, being her separate property, in the same manner as if she were unmarried. Sanity of mind is also requisite to the validity of a contract. A person who is, according to legal phraseology, *non compos mentis*, is incapable of making a binding contract. Intoxication was formerly held not to constitute an exemption from liability upon a contract made while in that state; but the rule is now otherwise, and it is held that a contract is void in all cases where the person at the time of making it was without sufficient understanding to know the nature and consequences of the contract, whatever may have been the cause of such disability. Mere imbecility or weakness of understanding, when it does not amount to an entire want of reason, is not sufficient to avoid a contract, but will have great weight in inducing courts to set aside a contract if there should appear to have been unfair practice or imposition by the other party. What is called in law duress, that is to say, any improper restraint forcibly exercised over the will, is a sufficient ground for avoiding a contract made under such influence. 2. In respect to the consideration of a contract, it is a general rule that there must be something mutual. A promise made without any consideration is a *nudum pactum*, and without any legal effect. To this, however, there are two exceptions, viz.: instruments under seal, and bills of exchange or promissory notes which have passed into the hands of an innocent holder who has given value. The consideration sufficient to sustain a contract may be what is called a good consideration, as natural affection between near relations, or a valuable consideration, as money or some other reciprocal benefit. The former is sufficient as between the parties, but is not allowed to prevail against the just rights of creditors or other third persons; as if a parent should give money or other property to a child when he was unable to pay his debts, the gift could be avoided by creditors or others having an equitable lien. A valuable consideration may be either a benefit to the party promising, or some prejudice to the party to whom the promise is made. Mutual promises furnish a sufficient consideration, each to sustain the other, provided they are made at the same time. If the consideration be wholly past and executed, it will be insuffi-

cient to support a promise founded thereon, unless the prior consideration was something done at the request of the party making the promise. An existing moral obligation is not in general a sufficient consideration for a promise. If a debt has been barred by the statute of limitations, or if a debtor has been discharged from payment of his debts by an insolvent law, the original indebtedment is a sufficient consideration for a new promise; but in a case where there had been merely a prior moral and not legal obligation, the weight of authority seems to be that it is an insufficient consideration. 3. The subject of the contract, or what is agreed to be done, must be lawful. A contract is not binding by which anything is agreed to be done which the law prohibits; so certain contracts are by statute avoided as being contrary to public policy. Instances of this class of cases are contracts of loan where the borrower agrees to pay more than a certain rate of interest, wager contracts, betting upon races, and the like. Money paid or deposited upon a wager or gaming contract can be recovered back. Upon a usurious contract the lender cannot recover even the principal sum; but the borrower cannot get back what he has paid, except the excess beyond legal interest. On this subject, however, statutes have made great changes. (See Usury.) 4. As to the application of the *lex loci* and *fori* to the construction of contracts and the determination of their legal effect, and the mode and extent of expressing the same, the subject is exceedingly complicated, and will be more appropriately discussed under the proper head. We can advert here but to some few leading principles. A contract, valid at the place where it is made, is in general valid in all other places, and is to be construed according to the law of the place where made; but if the contract is made in one country and intended to be performed in another, then the general rule is that the contract is to be construed and have effect according to the law of the place where it is to be executed. As if a contract be made in England for the loan of money to be paid in the United States, interest may be taken at the rate allowed in the latter country. But if the money should be advanced and security taken in England, although the security should be a mortgage of property in the United States, then the transaction would be governed by the law of England, and only the English rate of interest could be taken. If, however, the money was to be repaid in this country, our courts would hold the contract as having reference to our laws.—As to the remedies upon contracts, they are subject to the law of the place where the action is instituted. A foreign statute of limitations can have no effect here; but a discharge under an act of bankruptcy is recognized, though in the disposition of effects of the bankrupt in this country, claims of our own citizens are preferred.

CONTRAYERVA, the root of *Dorstenia contrayerva*, a plant of the natural order *urticaceæ* and suborder *moreæ*, growing in Mexico, the Indies, and Peru. The contrayerva of the West shops is probably a product of several species of *Dorstenia*. It is a stimulant tonic and diaphoretic, but very seldom used in this country. Its reputation as an antidote for all kinds of poisons has not been proved to be well founded.

CONTRERAS, a small village of Mexico, about 10 m. S. E. of the capital, at which a battle took place between the Americans and the Mexicans, Aug. 20, 1847. (See Churubusco.)

CONUS. See Cone Shells.

CONVENT. See Monastery.

CONVENTICLE (Lat. *conventiculum*, a little assemblage), a term originally applied to a cabal among a portion of the monks of a convent, formed in secret to secure the election of an abbot according to their own wishes. It came to be used as a term of reproach, and as such was applied to the assemblies of the followers of Wycliffe in England. It was afterward applied to the secret meetings of the dissenters from the established church in England and Scotland. Prior to the revolution of 1688 several statutes were enacted for the suppression of conventicles, and they became the objects of severe persecution. The term has attained a general signification for a seditious or irregular assembly of any kind, but is little used in the United States.

CONVENTION, in diplomacy, a treaty not definite and permanent, but having some special and temporary purpose; in politics, an assembly of a special and peculiar character. According to the British constitution, no parliament can be convened by any other authority than that of the sovereign, nor can a change of dynasty form the subject of its deliberations. Accordingly, in 1660, a convention was held in London to restore Charles II. to the throne, and its acts were afterward ratified by parliament. At the revolution of 1688 the prince of Orange summoned the lords and commons to meet in convention. That body settled the succession upon William and Mary, and was afterward declared to be the two houses of parliament. There was a convention of the estates of Scotland in March, 1689, to settle the Scottish crown upon William and Mary, which was changed into a parliament on the 5th of June. The annual meetings of the commissioners of the royal burghs of Scotland are also called conventions. In America the same term was applied to those bodies which at the commencement of the revolution assumed the powers previously exercised by the colonial governments, and especially to those by which the state and national constitutions were framed.—In French history the sovereign assembly which convened after the insurrection of Aug. 10, 1792, and the imprisonment of Louis XVI., is known as the convention. This body was organized Sept. 21, 1792, and immediately abolished royalty and proclaimed the republic. It brought the king to

trial Dec. 11; condemned him to death by a majority of 26 out of 721 votes, Jan. 16, 1793; established the revolutionary tribunal, March 10; decreed the formation of the committee of public safety, April 6; allowed the arrest of 21 Girondists, June 2; completed a new constitution, Aug. 10; decreed a universal levy for the national defence, Aug. 23; condemned Marie Antoinette, Oct. 16; appointed a committee with Sieyès at its head to frame a second constitution, April 19, 1794; received and adopted this constitution, June 23; ordered the arrest of Robespierre, July 27; prohibited the affiliation of clubs, Oct. 16; suppressed the Jacobins, Nov. 12; was successfully defended by Bonaparte against the sections of Paris, Oct. 5, 1795; decreed the abolition of capital punishment, handed over the government to the directory and the council of 500, and finally adjourned, Oct. 26, after having been in session three years and 35 days, and passed 8,370 decrees.—At present the term convention is applied in the United States not only to delegated bodies specially assembled by legislative authority, but to voluntary assemblies of delegates having some change of legislation or policy in view. It is also applied to bodies assembled as the representatives of parties, to make nominations to office or settle principles of action. The great quadrennial conventions of the respective parties have since 1836 played a very important part in politics; for though they have no legal or constitutional sanction, they nominate the president and vice president, and by their platforms or declarations of principles determine the policy of the country for the next four years. Their meetings are attended by great crowds, and their proceedings, which generally take two or three days, are watched with universal interest throughout the country. (See Constitutional Convention.)

CONVERSANO, a town of S. Italy, in the province and 18 m. S. E. of the city of Bari; pop. about 10,000. It is the seat of a bishop, and contains a castle, a fine cathedral, a Benedictine nunnery, and several convents. In the middle ages it was for some time the capital of the Norman conquerors of southern Italy.

CONVEYANCE, a term formerly equivalent to voluntary alienation, and including all modes of transferring real estate by the act of the owner, whether by feoffment and livery of seisin, which was a delivery of the possession of the lands themselves in the presence of witnesses; or by an instrument in writing, signed and sealed by the person making the sale, which instrument was commonly called a deed; or by matter of record, as in the cases of fines and common recoveries, which in form were judicial proceedings, but were in fact modes of voluntary alienation; or lastly, by will, which, although like the deed it was an instrument in writing, and required the signature of the testator (but not a seal), did not take effect till after the death of the party executing. Most of the old English forms of conveyance have become obsolete. The deed of bargain and sale, which is more used than any other in England for the ordinary transfer of the fee of lands, is founded upon the statute 27 Henry VIII., called the statute of uses. (See Bargain and Sale, and Common Law.) This last mode of conveying real estate became the basis of the forms of deeds used in this country; but in most of the states a still simpler form has been adopted, corresponding more nearly with the grant or common law conveyance of incorporeal estates. In several of the states the form of deed is prescribed by statute; and various provisions have been enacted in relation to its legal effect, as that no covenant shall be implied, and what words employed shall constitute covenants, and the legal effect thereof.

CONVOCATION (Lat. *convocare*, to call together), in the church of England, the assembly of the clergy by their representatives to consult on ecclesiastical matters, under the authority of a royal writ directed to the archbishop of each province. Assemblies of inferior clergy, at the call of their respective prelates, have been common from the earliest times; but, besides such councils, there were two other kinds peculiar to England, from which the present convocation is supposed to be derived. The first was the meeting of bishops and laity to legislate for the whole kingdom; the second was the assembling of the clergy to assess taxes on their own body at a period when they claimed to be exempt from taxation by parliament. With this latter purpose, convocations had been occasionally held in Saxon times, when the subsidies granted by the church to the crown bore the name of benevolences; but in the reign of Edward I. the practice was more definitively arranged. After the surrender of the right of self-taxation in 1665 had deprived the convocation of its political character, it continued to be held nominally for ecclesiastical purposes, though its real power was lost at the reformation. An act was passed under Henry VIII. which restrained it from making any canon or ordinance opposed to the royal prerogative, or to the laws, customs, and statutes of the realm. The king's consent became necessary, not only to give validity to its acts, but to enable it to proceed to business. The provinces of Canterbury and York have each their convocation, though the latter is very rarely called. There is an upper and lower house, the former composed of the bishops, the latter of the inferior clergy, represented by all the deans and archdeacons, one proctor for every chapter, and two for the clergy of every diocese. The convocation has authority to examine and censure heretical and schismatical books and persons, but an appeal lies from its decisions to the king in council or his delegates, nor can it execute its laws and canons except under many restrictions. The clergy in convocation have the same privileges as members of parliament.

There were formerly convocations of Scotland and Ireland, but they ceased in the former country soon after the revolution, and in the latter after the union.

CONVOLVULUS (Lat. *convolvere*, to entwine), or **Bindweed,** an extensive genus of twining



Convolvulus Japonicus.

plants, annual and perennial. Most of its species have large and bright flowers, opening early in the morning, but entirely closed later in the day. The distinguishing characteristics are the funnel-shaped corolla, naked and bractless calyx, and two linear stigmas of its flowers; and its two-celled seed capsules, each cell of which contains two seeds. The more important species are the *C. Japonicus*, or Japanese convolvulus, one of the brightest and most ornamental of the kinds seen in our gardens; the *C. scammonia*, from the root of which the drug scammony is extracted; the *C. batatas*, which has an edible root, and in the reign of Queen Elizabeth was exported from the West Indies to England, and sold as an article of food, filling somewhat the place of the potato, then scarcely known; and the *C. Mauritanicus*, a beautiful dwarf trailing species.

CONWAY, a central county of Arkansas, having Arkansas river on its S. W. border; area, 1,200 sq. m.; pop. in 1870, 8,112, of whom 630 were colored. The surface is agreeably diversified by mountains and valleys, and the soil well suited for the growth of corn and cotton. There is an abundance of good pasture land; the streams furnish valuable water power, and the country along the Arkansas river is rich in stone coal. The Little Rock and Fort Smith railroad is running to the county seat. The chief productions in 1870 were 9,439 bushels of wheat, 269,945 of Indian corn, 3,955 bales of cotton, and 7,127 lbs. of tobacco. There were 2,282 horses, 580 mules and asses, 3,195 milch cows, 4,630 other cattle, 4,402 sheep, and 27,172 swine. Capital, Lewisburg.

CONWAY, a town of Carroll co., New Hampshire, on the Saco, about 55 m. N. N. E. of Concord; pop. in 1870, 1,607. The village of North Conway, a favorite resort of summer visitors and artists, is situated on the uplands overlooking the valley of the Saco. On the east is a range of hills, the largest of which is called Middle mountain, with Mt. Kearsarge (3,367 ft. high) a little to the north. West of the river is Moat mountain, with the peaks of Mt. Chocorua in the distance. Looking up the valley of the Saco, there is a very fine view of Mt. Washington. The view of Mt. Washington from the summit of Mt. Kearsarge, and down the valley of the Saco, is very beautiful. In the vicinity are Artist's falls, and Echo lake at the foot of Moat mountain.

CONWAY, Conwy, or **Aberconwy,** a market town of Carnarvonshire, N. Wales, on the left bank of the river Conway near its mouth in Beaumaris bay, 13 m. N. E. of Bangor, and 233 m. by the Northwestern and the Chester and Holyhead railways N. W. of London; pop. in



Castle and Tubular Bridge.

1871, 4,050. It has some ship-building yards, and exports timber, lead, and slates, but possesses little commercial importance. The harbor is nearly dry at low water. A suspension bridge 327 ft. long, begun in 1822 and finished by Telford in 1826, at a cost of about £40,000, connects the town with a rock in the stream, whence an embankment 2,015 ft. long and 30 ft. wide at the top, formed of mountain clay faced with stone, extends to the opposite bank. A tubular railway bridge of wrought iron was

built here by Robert Stephenson in 1848; it is 400 ft. long and 18 ft. above high-water mark, and cost £110,000. The town is surrounded by an old wall with towers and battlements. The castle, founded by Edward I. in 1283, is one of the finest structures of the kind in Great Britain; its walls, overgrown with ivy, are from 12 to 15 ft. thick, and are surmounted by eight huge towers. The remains of an old Cistercian priory, and the "great mansion," built in 1585, are also interesting objects.

CONWAY, Moncure Daniel, an American author, born in Stafford co., Va., March 17, 1832. He received his early education at the Fredericksburg academy, and afterward entered Dickinson college, Carlisle, Pa., and graduated in 1849. He began the study of law at Warrenton, Va., but abandoned this to enter the Methodist ministry. He joined the Baltimore conference in 1850, was appointed to Rockville circuit, Maryland, and in 1852 to Frederick circuit. He also wrote for the "Richmond Examiner," as a warm upholder of extreme southern opinions. Having undergone a change of political and religious opinions, he left the Methodist ministry, and entered the divinity school at Cambridge, Mass., where he graduated in 1854. He then returned to Virginia, but was obliged to leave the state on account of his political opinions, and the same year became pastor of the Unitarian church in Washington. Some anti-slavery discourses, and especially one delivered after the assault upon Senator Sumner, led to his dismissal, and in 1857 he was settled over the Unitarian church in Cincinnati. The publication of some books on slavery and its relation to the civil war led to his invitation to lecture on this subject in New England, as he had already lectured in Ohio. During the war his father's slaves escaped from Virginia and were taken by him to Yellow Springs, Ohio, and settled there. In 1863 he went to England, and there wrote and lectured on the anti-slavery aspects of the war, and contributed to "Fraser's Magazine" and the "Fortnightly Review." Toward the end of that year he became minister of South Place chapel, Finsbury, and in 1867 also of a chapel formed at St. Paul's road, Camden Town, for evening service only, which posts he still occupies. Mr. Conway has published "Tracts for To-day" (Cincinnati, 1858); "The Rejected Stone" (Boston, 1861); "The Golden Hour" (1862); "The Earthward Pilgrimage" (London, 1870); and "Republican Superstitions" (London, 1873). A work by him entitled "Sacred Anthology" was announced in London in 1873. He is a frequent contributor to the daily liberal press in England, and to various magazines and newspapers in the United States. He has lectured before several learned societies in England, and was made a fellow of the royal anthropological society of Great Britain and Ireland in 1868.

CONWAY, Thomas, an officer in the American revolution, born in Ireland, Feb. 27, 1733, died about 1800. He was educated in France, where he entered the army and attained the rank of colonel. He came to the United States in 1777, at the recommendation of Silas Deane, and was at once made a brigadier general. He was at the battles of Brandywine and Germantown, and in December, 1777, was made inspector general with the rank of major general, against the protest of Washington. All through the terrible winter which Washington passed at Valley Forge, Conway was secretly plotting against him, and endeavoring to secure the promotion of Gates to the chief command. His proceedings became so notorious that the conspiracy was known as "Conway's cabal," and he became very unpopular. Early in 1778 he sent in his resignation, which to his surprise was promptly accepted. On July 4 of that year he fought a duel with Gen. Cadwallader, and, having received what he supposed to be a mortal wound, wrote a letter to Washington in which he said, "You are in my eyes the great and good man." He recovered, however, returned to France, and in 1784 was appointed governor of Pondicherry and all the French settlements in India, with the rank of *maréchal de camp*. On the breaking out of the French revolution he was forced to fly, and his life was saved only by the interposition of the British authorities.

CONY. See RABBIT.

CONYBEARE. I. John, an English prelate, born at Pinhoe, near Exeter, in 1692, died at Bath, July 13, 1755. He studied at Exeter college, Oxford, received orders, and was curate at Fetcham in 1717. He returned to Oxford in 1718, became successively tutor in his own college, preacher to his majesty at Whitehall, rector of St. Clement's, Oxford, and in 1730 master of Exeter college. In 1732 he published his celebrated answer to Tindal's "Christianity as old as the Creation," which Dr. Warburton styles one of the "best reasoned books in the world." In that year also he was appointed dean of Christchurch; and in 1750 he succeeded Dr. Butler in the bishopric of Bristol. A collection of his sermons was published after his death in 2 vols. 8vo. **II. John Josias,** an English divine and antiquary, grandson of the preceding, born in London in 1779, died in 1824. He was educated at Christchurch college, Oxford, became usher in Westminster school, and in 1807 was elected to the Anglo-Saxon professorship in the university of Oxford. He became professor of poetry in 1812, and delivered the Bampton lectures in 1824. He made valuable contributions to the annals of philosophy and science, and wrote "Illustrations of Anglo-Saxon Poetry," a work of great value. **III. William Daniel,** an English divine and geologist, born at Bishopsgate, June 7, 1787, died at Itchenstoke, near Portsmouth, Aug. 12, 1857. He received his degree of B. A. in 1808, and of M. A. in 1811, at Christchurch college, Oxford. He was one of the earliest and most active members of the geological

society, to whose "Transactions" he was a frequent contributor. He discovered and first described in 1821 the plesiosaurus, a discovery which was applauded by Cuvier and Buckland as one of the most important additions to the sciences of geology and comparative anatomy, and which opened the path of discovery since illustrated by the labors of Owen. He also furnished several papers on the coal districts of England, which are especially valuable as proving the relations between some of the principal British rocks and the order of their superposition. He published a course of theological lectures in 1836, delivered the Bampton lectures in 1839, and in 1845 was made dean of Llandaff. He was also a fellow of the royal society, elected in 1818, and a corresponding member of the institute of France. **IV. William John,** an English clergyman and author, son of the preceding, died in 1857. He published essays in the "Edinburgh Review" on ecclesiastical and social topics, one of which, on the parties within the Anglican church, attracted general attention. These were afterward collected; and a volume of his sermons at the chapel royal, Whitehall, has been published. With the Rev. J. S. Howson he wrote the "Life and Epistles of St. Paul" (2 vols., London, 1850–'52). He also wrote a novel, "Perversion, or the Causes and Consequences of Infidelity," which was published shortly before his death, and in which the religious aspect of the times was exhibited and discussed. **V. Henry,** an English civil engineer, brother of the preceding, born at Brislington, Somersetshire, Feb. 22, 1823. On the completion of his professional education he went to India, and from 1849 to 1852 had charge of the civil engineering department of the city and island of Bombay. In 1854 his report on the best means of supplying water to the city and island was approved by the supreme government of India, and he was appointed to construct the works, which were on an unusually large scale. He returned to England in 1855, and in 1856 designed docks for the port of Bombay. The same year he was appointed lecturer on civil engineering in the royal engineers' establishment for field instruction at Chatham. He has since been engaged in the construction of public works of importance in England.

COOK. I. A N. county of Texas, separated from the Indian territory by Red river, and drained by Elm fork of Trinity river and its affluents; area, 900 sq. m.; pop. in 1870, 5,315, of whom 471 were colored. The E. third of the county is wooded; the rest is prairie, except along the rivers. The bottom lands of Red river are very rich. The route of the proposed Memphis, El Paso, and Pacific railroad lies through it. The chief productions in 1870 were 16,233 bushels of wheat, 211,939 of Indian corn, 51,743 of oats, 22,664 of sweet potatoes, 76,809 lbs. of butter, and 308 bales of cotton. There were 3,479 horses, 3,015 milch cows, 27,503 other cattle, 3,086 sheep, and 16,226 swine. Capital, Gainesville. **II.** A N. E. county of Illinois, touching Indiana and Lake Michigan; area, 1,027 sq. m.; pop. in 1870, 349,966. The surface is level or undulating, much of it being occupied by prairies. The soil is remarkably rich and deep. The flat land was formerly thought unfit for cultivation, but is now generally esteemed the best since careful tillage has developed its richness. It is traversed by the Illinois and Michigan canal, and by various railroads centring in Chicago. It was organized in 1831, and named after Daniel P. Cook, a member of congress from Illinois, by whose exertions a grant of 300,000 acres of land was obtained from the United States to aid in the construction of the Illinois and Michigan canal. The chief productions in 1870 were 149,200 bushels of wheat, 570,427 of Indian corn, 1,584,225 of oats, 59,973 of barley, 444,554 of potatoes, 129,210 tons of hay, 1,088,963 lbs. of butter, 57,372 of wool, 36,505 of flax, and 2,644,960 gallons of milk sold. There were 12,770 horses, 23,063 milch cows, 14,486 other cattle, 10,622 sheep, and 15,521 swine. There are a large number of manufacturing establishments, chiefly in Chicago, the county seat.

COOK, Charles, D. D., an English clergyman, one of the founders of French Methodism, and president of the French Wesleyan conference, born in London, May 31, 1787, died Feb. 21, 1858. After a few years devoted to the work of education, he entered the Wesleyan ministry in 1817, and in 1818 was appointed by the British conference to the French mission in Caen, Normandy. Through his labors societies were organized, circuits were formed, and a native ministry recruited from year to year. He was a powerful co-worker with D'Aubigné, De Felice, Malan, Gaussen, the Monods, and others in the revival among the French Protestants. At his death there were in France 2 Methodist districts, 12 circuits, 141 chapels, 26 itinerants, 65 local preachers, 1,386 members, day and Sunday schools, a monthly periodical, and Bible, tract, and missionary societies.

COOK, Dutton. See supplement.

COOK, Eliza, an English authoress, born in Southwark, London, in 1817. Her father was a tradesman in narrow circumstances; and her mother dying when she was 15 years of age, her home was neither pleasant nor happy. She had early evinced a taste for literature, and now sought in intellectual pursuits relief from the hardships of her situation. In 1837 she became a contributor to the London "Weekly Despatch," and wrote for other periodicals. In 1840 a collection of her poems, under the title of "Melaia and other Poems," was published in London. In 1849 she became the editor of "Eliza Cook's Journal," a weekly publication, designed, in her own words, "to aid the gigantic struggle for intellectual elevation now going on." For several years it contained many vigorous prose articles and poems from her pen, but was discontinued in 1854 on account of her

illness. Several editions of her poems have been published, and in 1864 a new volume appeared under the title of "New Echoes and other Poems." The same year she obtained a literary pension of £100.

COOK, James, an English navigator, born at Marton, Yorkshire, Oct. 27, 1728, killed at the Sandwich islands, Feb. 14, 1779. His father was a farm laborer; and in his 13th year the future navigator was apprenticed to a haberdasher in Staiths, a little fishing town near Whitby. His father dying, he persuaded his master to give up his indentures, and engaged himself as cabin boy in one of the coasting vessels of Whitby. Having spent several years in this service and become master of a vessel, in 1755 he shipped in the royal navy, and was speedily promoted to the quarter deck for his efficiency. Having been master successively of the sloop Grampus and the Garland, in 1759 he had his master's rank confirmed by the admiralty and was appointed to the Mercury, a frigate belonging to the squadron sent out to coöperate with Gen. Wolfe at Quebec. He piloted the boats of the squadron to the attack of Montmorency; conducted the disembarkation of the troops for the assault on the heights of Abraham; made careful soundings, and afterward published a chart of the channel of the St. Lawrence from Quebec to the sea. Being promoted to the flag ship Northumberland, he made use of his leisure to study mathematics and astronomy. In 1762 he was present at the recapture of Newfoundland. Returning to England, he married, and in 1763 came out to survey the coast of Newfoundland, and in the following year was appointed marine surveyor of that coast and of Labrador. Meantime he had published a number of charts, and while near Cape Ray was able to observe an eclipse of the sun. The record of his observations, published in the "Philosophical Transactions," showed an accuracy which gave him a high reputation as an astronomer. When the royal society obtained the consent of the king to fit out an expedition for the purpose of observing the transit of Venus over the sun's disk, which could only be done in the Pacific ocean, he was chosen to command the vessel. He received a royal commission as lieutenant, chose the Endeavor, of 370 tons, as the expedition ship, and sailed Aug. 23, 1768, from Plymouth, accompanied by Mr. Green as astronomer, and Mr. (afterward Sir Joseph) Banks as naturalist of the expedition. On April 13, 1769, the Endeavor reached Tahiti, where the necessary astronomical observations were successfully made. He next sailed in search of the Antarctic continent, then believed to exist near the south pole; rediscovered New Zealand, and first saw the narrow strait which divides it into two parts; took possession of the coast of Australia about Botany bay in the name of the king of Great Britain, and laid down 1,300 m. of the coast line; proved by actual investigation the entire separation of that island and Papua; after various escapes from shipwreck and native hostility, put into Batavia to refit, where 30 of his men died of the country sickness; and finally reached England, June 11, 1771, having in less than three years circumnavigated the globe and fulfilled the various objects of the expedition. His journal and the papers of Banks were used by Dr. Hawkesworth as material for his account of the voyage. Australia being demonstrated to be an island, the great southern continent was supposed to lie nearer the pole. To settle this point, it was determined to send out another expedition. Two ships, the Resolution, of 462 tons and 112 men, commanded by Cook, and the Adventure, of 336 tons and 81 men, commanded by Tobias Furneaux, sailed from Plymouth, July 13, 1772, with instructions to "circumnavigate the whole globe in high southern latitudes, making traverses from time to time into every part of the Pacific ocean which had not undergone previous investigation, and to use his best endeavors to resolve the much agitated question of a southern continent." After sailing over 3,660 leagues, reaching lat. 71° 10′ S., in lon. 106° 54′ W., and being out of sight of land 117 days, the Resolution (May 18, 1775) rejoined the Adventure at New Zealand. Cook was now satisfied that no continent existed at the south; but after wintering in the Society islands, he examined the waters to the eastward of his former cruise, between lat. 60° and 70°; then explored the ocean between lat. 43° and 56°, from Easter island to the New Hebrides; discovered and named the island of New Caledonia; and finally turned eastward toward Cape Horn, and returned by way of the Cape of Good Hope to England, arriving July 30, 1775, after an absence of three years and 16 days, in which time the vessels had sailed over 20,000 leagues. He was now made post captain, and appointed a captain of Greenwich hospital. He was also chosen member of the royal society, Feb. 29, 1776, and received the Copley gold medal for the best experimental paper of the year, in which he gave an account of his method of preserving the health of his men. The possibility of achieving a northwest passage to Asia had begun again to occupy the public mind, and Cook volunteered to take charge of an expedition to ascertain its practicability by making the attempt by way of Behring strait. He sailed from Plymouth July 12, 1776, with two ships, the Resolution and Discovery, the latter under command of Capt. Charles Clerke. After spending some time in exploring the islands of the South Pacific, he set out for Behring strait, and on his way, in January, 1778, discovered the group which he named the Sandwich islands. Circumnavigating these, and laying down their position on the chart, he reached the coast of America in March, sailed up a sound since known as Cook's inlet, and finding no passage through set out for Behring strait. Here he was stopped by an impassable barrier of ice. He determined the most west-

erly point of America and its distance from Asia, reached the point still known by the name he gave it, Icy cape, Aug. 18, 1778, and did not turn back till the end of the month, when he found it impossible to proceed. Returning to the Sandwich islands to prepare for another attempt northward the next year, he discovered Hawaii, the largest of the group, and Maui. He cruised about Hawaii several weeks, and found the natives peaceably disposed, but addicted to stealing. One of his boats being stolen on the night of Feb. 13, 1779, he determined to seize the person of the king and hold him until the property was restored. Going ashore for the purpose on the 14th, with a lieutenant and nine men, he aroused the suspicions of the natives, and a fight ensued in which he was killed. The body, and those of several marines who were slain, were afterward cut up and probably devoured, only the bones of the great navigator being recovered by the expedition seven days later. These were deposited in a coffin, and buried in the sea. After another unsuccessful attempt in Behring strait, the expedition returned home by way of China. Cook's widow received a pension of £200 per annum, and each of his children £25. An account of his last voyage was prepared from his journal, and a continuation of it by Lieut. King. The charts and plates illustrating it were executed at the expense of the government, and half the profits of the work were bestowed on his family.

COOK, Joseph. See supplement.

COOKE, George Frederick, an English actor, born in Westminster, April 17, 1755, died in New York, Sept. 26, 1812. His father, an Irish captain of dragoons, died soon after his birth, and his mother removed to Berwick-upon-Tweed, where he was placed at school, and afterward apprenticed to a printer. Conceiving a strong passion for the stage, he indulged it for some time in private, and first appeared as a professed actor at Brentford in 1776, as Dumont in the tragedy of "Jane Shore." He performed at the Haymarket in London in 1778, without attracting attention, and after being a member of several provincial companies first attained popularity at Manchester in 1784. In 1794 he joined the Dublin company, became the hero of the stage at Dublin, Cork, and Manchester, and in 1800 accepted an engagement at Covent Garden, London, where he appeared with decided success as Richard III. For ten years he was the rival of John Kemble, and played both in tragedy and comedy in the largest cities of Great Britain. His most popular characters were those of Richard III., Shylock, Iago, Sir Giles Overreach, Kitely, and Sir Pertinax Macsycophant. In 1810 he sailed for America, and on Nov. 21 appeared as Richard III. in the Park theatre, New York. He subsequently acted in Philadelphia, Baltimore, and other cities, attracting large audiences, whom he annoyed by his capricious conduct and astonished by his wonderful acting. His death was hastened by his intemperate habits. His memoirs were written by William Dunlap in 1812, and notes of his conversation and many incidents of his life and associates in New York are contained in Dunlap's novel of "Thirty Years Ago" (1836). He is buried in St. Paul's churchyard, New York, where a monument was erected to his memory by Edmund Kean in 1821.

COOKE, George Wingrove, an English lawyer and author, born in Bristol about 1814, died at Chelsea, June 18, 1865. He studied at the London university, in Oxford, and at the Middle Temple, and was called to the bar in 1835. He was for a time the political editor of the "Atlas" newspaper, and in 1857–'8 was a special correspondent of the "Times" in China. In 1850 and 1851 he was an unsuccessful candidate for parliament. In 1863 he was appointed tithe, copyhold, and enclosure commissioner, in which department he had previously been long employed as a lawyer. Besides several legal works, he published "Memoirs of Lord Bolingbroke" (1835), "Life of the Earl of Shaftesbury" (1836), "History of Party" (1836), "Inside Sebastopol" (1856), "China in 1857–'8" (1858), and "Conquest and Colonization of North Africa" (1860).

COOKE. I. John Rodgers, an American jurist, born in Bermuda in 1788, died in Richmond, Va., Dec. 10, 1854. During a professional career of more than 40 years, he was concerned in nearly all the great causes carried to the higher courts of Virginia. He served in the legislature in 1814, and in 1829 was a member of the convention which framed the constitution of Virginia, serving on the committee of seven, including Chief Justice Marshall, ex-President Madison, John Randolph, Watkins Leigh, and others, who made the draft of that instrument. **II. Philip Pendleton,** an American poet, son of the preceding, born at Martinsburg, Va., Oct. 26, 1816, died Jan. 20, 1850. He graduated at Princeton college in 1834, and returning to Virginia, studied law in the office of his father, was admittted to the bar, and married before he was 21. At college the greater portion of his time had been given to the study of poetry and belles-lettres, and he always took more pleasure in literary pursuits than in his profession. He published several poems in the "Knickerbocker" magazine, and on the establishment of the "Southern Literary Messenger" became one of its contributors. His only publication in book form was "Froissart Ballads and other Poems" (1847). At the time of his death he was publishing serially the "Chevalier Merlin," a historical prose poem. **III. John Esten,** an American author, brother of the preceding, born at Winchester, Va., Nov. 3, 1830. After the removal of his family to Richmond in 1839 he was sent to school, and finally prepared himself for the bar, to which he was admitted in 1851. Having contributed stories and sketches to various periodicals, he published a novel, "Leather

Stocking and Silk" (1854), which was almost immediately followed by "The Youth of Jefferson" and "Virginia Comedians." In 1855 appeared "Ellie, or the Human Comedy," in 1856 "The Last of the Foresters," and two years later "Henry St. John, Gentleman." This series of fiction presents many phases of life in Virginia. During the civil war he served on the staff of different confederate generals until the close of the contest, and wrote a "Life of Stonewall Jackson" (1866). He resides on a farm near Winchester, Va. His later works are: "Wearing of the Gray" (1867); "Mohun, or the Last Days of Lee and his Paladins" (1868); "Hilt to Hilt, or Days and Nights in the Shenandoah" (1869); "Hammer and Rapier" (1870); "Out of the Foam" and "Life of Robert E. Lee" (1871); "Doctor Vandyke" (1872); and "Her Majesty the Queen" (1873).

COOKERY, the preparation of food by dressing, compounding, and the application of heat. Posidonius was of opinion that the culinary art followed immediately the discovery of fire, and that it was at first an imitation of the natural process of mastication and digestion. There are frequent allusions to cooking in the Bible and in the oldest writings of all nations. In the East, the land of spices, the taste was first tempted by carefully wrought compositions and condiments, and the first great feasts were given. It was the custom of the ancient Egyptians, as at present in oriental and tropical climates, to cook the meat as soon as killed, with the view of having it tender. Beef and goose constituted the principal part of the animal food, though the kid, goat, gazelle, duck, teal, and quail were also well known. Mutton was excluded from a Theban table, and Plutarch says that no Egyptians except the Lycopolites would eat the flesh of sheep. The blood of animals was frequently received into a vase for purposes of cookery, and black puddings were popular in Egypt, as they afterward were in modern Europe, to the horror of the Moslems. Large supplies of fish were obtained from the Nile and Lake Mœris, and were brought to the table whole, boiled or fried, the tail and fins being removed. Herodotus says no Egyptian would taste the head of any species of animal. The vegetables which abound in Egypt made a large part of the ordinary food; they were eaten raw, stewed, boiled, or roasted in ashes. Bread was made either of wheat or of barley, and the dough was sometimes kneaded with the feet in a wooden bowl on the ground. Pastry was made to represent any object, according to the fancy of the confectioner, and was sprinkled with seeds of caraway, cummin, or sesame.—The Greeks raised every department of cookery to a high art. In the Homeric age royal personages prepared their own meats. Menelaus at the marriage feast of Hermione placed before the guests with his own hands the roasted side of an ox. Achilles, with the assistance of Patroclus, feasted the Argive leaders upon the shoulders of lambs, a fat doe, and a succulent pig, which were broiled on live coals and garnished with the entrails of oxen; dishes, according to Athenæus, "consecrated to the gods, and usual at all the feasts of the brave." They were contented in that age with plain roasts, seldom boiling their meat or dressing it with sauces. Professional cooks had come into existence before the age of Pericles. They could serve up a whole pig dexterously boiled on one side, roasted on the other, and stuffed with flavored and spiced thrushes, eggs, and various delicacies, so that the guest could not discover where the animal had been divided. To invent a popular cake or a poignant sauce was a worthy object of ingenuity and eruditjon. Aristoxenus after many trials succeeded in a peculiar way of seasoning hams, which were hence called Aristoxenians; as afterward the Roman Apicius, one of the three gastronomers of that name, devised a sort of cakes which were termed Apicians. Nearly all the Athenian dishes were prepared with a mixture of asafœtida or rue, and one of the most popular was a composition of cheese, garlic, and eggs. The Greeks and Romans extracted delicacies from the tough membranous parts of the matrices of sows, the flesh of young asses and young hawks, and from a great variety of sea fish, as the dog fish, star fish, porpoises, seals, and especially from two species termed the *echinus* and the *glociscus.* The Syracusans were especially noted for their culinary successes, while the Spartans, despising luxury of all kinds, had the term of reproach "to live like a Syracusan." A certain Sybarite, after tasting the Lacedæmonian black broth, declared himself no longer astonished that the Spartans were so fearless of death in battle, since the pains of dissolution were preferable to those of existence on such execrable food. The poet Archestratus, a culinary philosopher of Syracuse, travelled through the most fertile lands known to the ancients, crossing many seas, and passing through many dangers and hardships, in order to add edibles and potables from every climate to the Greek table luxuries. His "Gastrology," a didactic poem in which he promulgated the results of his researches, became the authoritative creed of Greek epicures. It was a favorite exercise of accomplished cooks, when rare and choice fish were wanting, to imitate their flavor, taste, and form so closely from inferior varieties that the most experienced gourmand could not distinguish the fraud. The Greeks excelled in sweetmeats, fruits, and the artistic ornaments and order of an entertainment, but the Romans in the more solid dishes. Simplicity of tastes and severity of manners disappeared during the latter part of the Roman republic, and under the empire luxurious gluttonies were indulged in at almost fabulous cost.—The more common Roman delicacies were pheasants, beccaficos, quails, partridges, oysters, sea eels, and Cecubian and Falernian wines. Rare fishes and birds were

objects of special luxury, and after Rome had learned from every neighboring country their best devices of cookery, native productions were despised, while at a single festival there would be served up peacocks from Samos, chickens from Phrygia, kids from Melos, cranes from Ætolia, tunny fishes from Chalcedon, pikes from Pessinus, oysters from Tarentum and Britain, mussel fishes from Chios, and dates from Egypt, with various foreign condiments. Some fishes were so costly that Cato once declared that "a city cannot endure in which a fish is sold for more than an ox." Curious artificial means were employed of raising delicacies for the table. According to the elder Pliny, snails were sometimes fattened till their shells would contain several quarts. Geese, peacocks, and fish were raised upon nourishment specially adapted to temper them as food, and swine were fattened on whey and figs. The supper, which was their principal meal, consisted of three courses: the first, of soups, lettuce, eggs, and honeyed wines; the second, of solid meats, ragouts, broiled viands, and fish; and the third, of crude fruits, preserves, tarts, and sweet dishes; the meals thus, according to a common saying, "beginning with eggs and ending with apples," whence the whole duration of anything was expressed by the phrase *ab ovo usque ad mala*. Lucullus gave feasts on a scale of inordinate magnificence, expending upon each 50,000 denarii (about $8,000). Galba breakfasted before daybreak at an expense sufficient to enrich a hundred families. Vitellius composed a single dish which cost 1,000 sesterces (about $40,000), of the brains of pheasants and peacocks, the tongues of nightingales, and the livers of the most precious fish; he once entertained his brother on 7,000 birds and 2,000 choice fishes; and his culinary expenses for four months amounted to about $25,000,000. The favorite supper of Heliogabalus was the brains of 600 thrushes. The favorite meat of the later Romans was pork, which held the place of honor on every luxurious table. "Hog in Trojan style" was, according to Macrobius, the masterpiece of the greatest artists. It was inherited from the Greeks, and was named from the circumstance that its interior contained myriads of thrushes, ortolans, and beccaficos, an image of the armed hosts enclosed in the Trojan horse. The manner of preparing it, long known to few, at length became public. The animal, after being bled under the shoulder, was hung up, and its intestines were drawn out through the throat; these were thoroughly washed, filled with hashed meat and a thick gravy, and then forced back into the body, which was also stuffed with small game. Half of it was then baked, the other half being covered and protected by a thick paste of barley meal, mixed with wine and oil; and the latter half was afterward boiled in a shallow saucepan. Young pigs were in especial demand, and pork, cooked in numerous styles, was eaten to such an extent that sumptuary laws were enacted limiting its consumption. In the mansions of the wealthier patricians, the kitchens were magnificently furnished with marble floors, pictures, and a profusion of ornaments. The culinary utensils, as gridirons, colanders, and dripping pans, were of bronze plated with silver; and the saucepans were of brass or earthenware, or sometimes of silver. Every article of food was served in bronze chafing dishes, "in order," says Seneca, "that no viand should be chilled." During the latter period of the empire there were not only schools of cookery, in which accomplished cooks acted as professors, but a profession was also instituted for the purpose of teaching the young patricians "how to masticate." The most curious relic of ancient literature on the subject is the *Deipnosophistæ*, or "Banquet of the Learned," of Athenæus, containing philosophical discussions on the history and quality of nearly every dish known to the Romans.—After the descent of the barbarians southward in the 5th century, cookery, like learning, retired into convents. The good cheer of the monks and the secular clergy at that period, and in the centuries immediately succeeding, is frequently alluded to in the early European poems and romances. In the 10th century refined cookery reappeared in Genoa, Venice, Florence, Milan, and other free cities of Italy, in which great fortunes had been made by commerce. It became more widely cultivated at the period of the renaissance, and flourished with eloquence, poetry, and painting, under the protection of the houses of Este and Medici, of Leo X. and the cardinals. The discovery of America and of the passage to the East Indies around the Cape of Good Hope contributed much to its development by enlarging the number of gastronomic productions, and especially by furnishing better seasoning than had before been known. The ancients had made use chiefly of cummin, mint, saffron, garlic, and oxymel; to these were now added cinnamon from Ceylon, vanilla from Mexico, cloves and nutmegs from the Molucca islands, pepper from Java, and allspice from the Caribbees. In the reign of Henry II. the elegant delicacies of Italian cookery were introduced into France by the train of cooks which followed Catharine de' Medici. About the same time several northern cities distinguished themselves by their gastronomic specialties: Mentz and Hamburg, by their hams; Strasburg, by lard and smoked sausages; Amsterdam, by herrings; Hamburg, by smoked beef; Ostend, by oysters; Périgueux, by truffles; and Chartres and Ruffec, by pies. The Britons were generally simple in their diet, with no higher culinary attainment than that of bruising their grain in a mortar; the Saxons were likewise savages in gastronomy, rejoicing in distilled barley and half-cooked game; the Danes were more hospitable, voracious, and bibacious, carousals being almost a part of their religion; but the Normans were the first to introduce in Britain the delicate refinements of

the art. The chief cook and his subordinates were officers of high consequence in the train of William the Conqueror. The monasteries of England were soon after famous for their luxuries, and in the reign of Henry II. the friars of St. Swithin complained to the king that the abbot had withdrawn three of the thirteen courses usually accorded them. Chaucer in his "Canterbury Tales" often mentions the good fare and skilful tastes of the clergy. In 1541 Archbishop Cranmer determined to regulate the culinary expenses of the clergy by an edict, and limited the archbishops to six dishes of meat (or of fish on fish days), the bishops to five, and the lower orders to four or three. The number of fowls and fish to be served in a dish was also detailed. The English nobility began to rival the Romans in expensive entertainments soon after the return of the crusaders, who during their travels had been made acquainted with oriental luxuries. Among the choicest dishes of that era was the peacock, generally served with the feathers of the tail unplucked and spread out to their fullest extent. In the reign of Elizabeth the mediæval style of cookery attained its zenith. Cooks were then classical scholars, and the heathen divinities were represented at every festival. Shortly after the Elizabethan period, a considerable alteration took place in the domestic economy of the nobility. Early hours and stricter habits were enjoined.—In France, the Gauls when first discovered subsisted chiefly on acorns and roots. Conquered by Cæsar, they speedily acquired the habits of their victors; and the Normans early attained great proficiency in the arts of luxury. In the latter part of the 14th century flourished the celebrated Taillevant, *chef de cuisine* for Charles V. and VI., from whom we have the recipe for a famous dish of that epoch called *galimafrée:* "Dismember a chicken, and cook it with wine, butter, verjuice, salt, pepper, nutmeg, thyme, laurel, and onions. When sufficiently cooked, add to the gravy some *cameline*" (a sauce composed of butter, cinnamon, ginger, allspice, grains of paradise, bread crumbs, and aromatic vinegar). Spices being very expensive at that period, a great consumption was made of them through vanity. In the reign of Louis XII. a company of *sauciers* obtained a monopoly for making sauces; and a company of *rôtisseurs*, for cooking meats on the spit. French cookery was of a sumptuous character in the reign of Louis XIV., and the table of the king rivalled in delicacy that of the great Condé, over which presided Vatel, who in despair at the tardiness of a dish committed suicide, and whose eulogy was written by Mme. de Sévigné. In the reign of Louis XV., especially under the regency, flourished Sabatier, Robert, Laguipierre, and other masters of the art, who introduced salutary improvements. Small supper entertainments, models of delicacy, savor, and elegance, and without superfluous show, came into fashion, and the great houses established what was termed the *petite cuisine*, which is still flourishing. The era of the revolution threatened to abolish with the privileges of the nobles the refinements of cookery, and famed culinary artists found themselves suddenly turned into the street. They instituted restaurants, which were received with favor by the citizens, and in which the art made progress under the directory and the consulate, till it was revived with new splendor in wealthy houses under the empire. Among the most illustrious recent French cooks are Boucher, Lasnes, Leiter, Delauny, Borel, Véry, Soyer, and Carême. The last converted the art into a science, made taste yield to chemistry, and the kitchen became instead of a workshop a laboratory. His works on the art of cookery are unrivalled.—The natural elements of food are found throughout the vegetable and animal kingdoms. The principal processes are boiling, roasting, frying, broiling, and baking. The great object in cooking meats is to retain as much as possible of their natural juice. Hence, when boiled they should be plunged at first into boiling water, that their outer part may contract and become impenetrable. On the other hand, the meat for soup should be put into cold water and gradually heated. It has been observed that hard water is better for boiling mutton, and soft water for vegetables. By boiling mutton loses one fifth of its weight, and beef one fourth; by roasting they each lose one third. Frying is the least healthful of all the operations. Broiling, by which the surface is suddenly browned and hardened and the juices retained, is the most eligible style for those who wish to invigorate themselves. Baking renders meat very savory and tender, not only by retaining the juices, but also by not permitting the escape of the fumes; but it causes greater retention of the oils, and therefore renders meats less easily digestible. The size and other conditions of a joint, or rather piece, are to be skilfully considered in cooking it. There are four principal French sauces, *l'Espagnole*, *la veloutée*, *l'Allemande*, and *la Bechamel*, two of them brown and two white, forming the bases of almost every other sauce. Among national dishes are the roast beef, beef steak, and plum pudding of England, the salt beef of Holland, the *Sauerkraut* of Germany, the *caviare* of Russia, the *pilau* of Turkey, the *polenta* and *macaroni* of Italy, and the *garbanzos* and *olla podrida* of Spain.—An acquaintance with the arts of cookery may be obtained from the cookery books, which abound throughout the civilized world. The oldest of these in modern times that has been preserved dates from the second half of the 14th century; it is entitled *Le ménagier de Paris*, and was written by a citizen of that city named Le Sage. Moral counsels are mingled in it with very full and curious culinary details. Another book by Taillevant, royal cook of France, dates from about 1392, and passed through eight editions

between 1480 and 1602. An excellent Italian treatise on cookery by Bartolommeo Scappi, chief cook of Pope Pius V., was published in 1570. Among the numerous cookery books which are in use and authority at the present time are Rumohr's edition of König's *Geist der Kochkunst* (Stuttgart, 1832); Otto's *Praktische Anleitung zur Kochkunst* (Leipsic, 1842); Carême's *Art de la cuisine française au XIX. siècle*, also his *Pâtissier pittoresque* and *Cuisinier parisien* (Paris, 1854); Plumerey's *Entrées chaudes* (Paris, 1854); the *Dictionnaire général de la cuisine française;* "The Cook, or Ladies' Kitchen Directory" (London); Kitchiner's "Cook's Oracle;" "Encyclopædia of Domestic Economy," by Webster and Parkes (London, 1844; with additions, New York, 1845); the "Housekeeper's Receipt Book," by Miss Catharine E. Beecher (New York, 1845); Miss Leslie's "New Cookery Book" (Philadelphia, 1857); "The Modern Cook, a Practical Guide to the Culinary Art in all its Branches," by C. E. Francatelli, pupil of Carême, and late *maître d'hôtel* to the queen of England (with additions, Philadelphia, 1858); "The Modern Housewife," translated from the French of Alexis Soyer (New York, 1859); "What to Eat and How to Cook it," by Pierre Blot (New York, 1863); "Handbook of Critical Cookery," by Pierre Blot (New York, 1868); "Common Sense in the Kitchen," by Marian Harland (New York, 1871); and Alexandre Dumas's *Grand dictionnaire de cuisine* (Paris, 1873). Other works in illustration of the subject are *De Honesta Voluptate et Valetudine*, by the Italian ecclesiastic Platina (1473); the *Almanach des gourmands*, by Grimod de la Reynière (8 vols., Paris, 1803–'12); and the brilliant and amusing *Physiologie du goût*, by Brillat-Savarin (Paris, 1825).

COOKMAN, George G., an American clergyman, born in Hull, England, Oct. 21, 1800, died at sea in March, 1841. He received a careful education, and joined the Methodist church in 1820. Three years later he visited the United States on business connected with his father's firm, and while here resolved to enter the ministry. In 1825 he joined the Philadelphia conference, and in 1833 was transferred to the Baltimore conference, and afterward labored in various portions of Pennsylvania, New Jersey, Maryland, and the District of Columbia. In 1838–'9 he was elected chaplain to congress. On March 11, 1841, he embarked in the steamship President to visit his native land, and perished with that vessel. Of his numerous sermons and addresses only one small volume has been published, "Speeches" (New York, 1841).

COOK'S ISLANDS, or **Harvey Archipelago,** a group of islands in the Pacific, lying S. of Polynesia, between the archipelago of Tonga on the west and Tahiti on the east, in lat. 20° S., lon. 157° W. The largest are Mangeia, Atiou, Harvey, and Raratonga. They are inhabited by people of the Malay race, most of whom have been converted to Christianity by English missionaries. Raratonga is a centre of Protestant missions in the Pacific islands. The population is estimated at 11,500, of whom 5,000 belong to Mangeia, 3,500 to Raratonga, and 1,000 to Atiou.

COOK'S STRAIT, a passage separating the northern and middle islands of the New Zealand group. Its discovery by Capt. Cook dissipated the belief then prevalent that New Zealand was part of a great southern continent. It varies from 20 to 80 m. in width. Wellington and Nelson, two of the largest towns of the English colony, are on this strait, the shores of which are subject to occasional earthquakes.

COOKSTOWN, a town of Ireland, county Tyrone, situated on the Belfast and Northern Counties railway, 10 m. N. of Dungannon; pop. in 1871, 3,653. It contains a Protestant church, a Roman Catholic church, two Methodist and three Presbyterian chapels; and in the vicinity is the union workhouse. The flax market is among the largest in Ulster.

COOLEY, Thomas McIntyre, an American jurist, born at Attica, N. Y., Jan. 6, 1824. He began the study of law in 1842 at Palmyra, N. Y., but removed the next year to Adrian, Mich., where he was admitted to the bar in 1845. For a time he edited a newspaper, "The Watch Tower." In 1857 he was appointed by the legislature to compile and publish the laws of the state, and in 1858 he was chosen reporter of the decisions of the supreme court. He held this office seven years, during which he published eight volumes of reports, which were followed by a digest of all the reports of the state. In 1859 the law department of the Michigan university was organized, and he was chosen one of the board of professors. He removed to Ann Arbor, where he resides, holding the office of dean in the law faculty. In 1864 he was elected to fill a vacancy on the bench of the supreme court of the state, and in 1869 was elected to that office for the full term of eight years. In 1868–'9 he held the position of chief justice. He has published a treatise on "The Constitutional Limitations which rest upon the Legislative Power of the States of the American Union" (1868; 2d ed., enlarged, 1871), and editions, with copious notes, of Blackstone's "Commentaries" (1870), and of Story's "Commentaries on the Constitution of the United States," with additional chapters on the new amendments (1873). He has during his judicial career given many important opinions, some of them upon great constitutional questions. Among these is one in 1870 against the right of cities and towns to raise money by public tax in aid of railways and private corporations.

COOLY (Hindostanee, *kûli*, day laborer), a term applied by Europeans to laborers in the East Indies, China, and Japan. It has become familiar chiefly in a restricted sense, denoting those eastern laborers imported for work upon tropical plantations, either under contract for

a term of years, as in the case of the British colonies, or by force and fraud, as in the case of Cuba and Peru. The term is not commonly applied to the free Chinese immigrants into the United States, Australia, &c. Coolies, in the restricted sense of the term, may be divided into two classes, viz.: those from India, and those from China.—The first attempt at the employment of Indian coolies appears to have been made in British Guiana about the time of the full emancipation of the slaves in 1838. A ship load of coolies was brought over in that year from Calcutta by private enterprise, but the experiment was not successful. The immigrants suffered greatly from diseases incident to change of life and climate, particularly from the bites of the chigo and other insects, which from neglect produced ulcers affecting life and limb. The mortality became so great as to lead to public investigation of their case, which caused great excitement in England, and the British Indian government interfered to stop the emigration of coolies. The urgent solicitations, however, of the planters of British Guiana, Trinidad, and Mauritius obtained an order in council, Jan. 15, 1842, by which the emigration of Hindoos was allowed under certain strict regulations, including the appointment of emigration agents in India and the colonies, whose duty it was to look after the welfare and rights of the coolies. The vessels that transported them were also placed under strict control as to number of passengers, provisions, &c. The passage money was advanced by way of bounty from the colonial treasury, which sometimes obtained reimbursement from the planters. This branch of cooly emigration, occurring wholly within the British dominions, is under the restraint of law both at the point of embarkation and of landing. In speaking of the regulations and working of the system in the colonies, we refer particularly to Guiana, which may be taken as representing them all. In India the emigration is now governed by the Indian acts of 1864 and 1869, which provide for a resident colonial emigration agent, by whom the recruiting agents who visit the country districts are appointed. These recruiting agents are licensed by the protector of emigrants at Calcutta, who is appointed by the government. Each agent takes the recruits he has enlisted before the resident magistrate of the district to which he is assigned, for registration; copies of the register, stating age, sex, caste, former occupation, and the rate of wages in the colony, are given to the emigrant, and duplicates are sent to the colonial emigration agent. After registration the recruits are forwarded to the depot at Calcutta, where they are examined by the colonial agent and by surgeons, to ascertain their physical fitness. A surgeon accompanies each cooly ship, who makes return of the deaths and sickness on the passage. These regulations, while they have done much to prevent injustice and imposition upon the ignorant emigrants, are said to be frequently evaded by the recruiting agents, who misrepresent the rate of wages in the colony, the duties that will be required of the coolies, and the laws to which they will be amenable. Before embarkation the emigrants enter into a contract with the colonial agent to serve 7½ hours a day for a period of five years as agricultural laborers on any estate to which they may be assigned by the governor of the colony, in return for which they are to receive a house, garden ground, and medical attendance free of expense, and the same rate of wages as may from time to time be paid to unindentured laborers on the same plantations. After ten years' service they are entitled to a return passage. In the colony the coolies are under the control of the immigration department, which exercises a general supervisory and protective power over them during their term of service, and with respect to their indentures are governed by the consolidated immigration ordinance of 1864, as amended in 1868. Upon their arrival the immigration agent general and the health officer of the port are required carefully to inspect them, and to separate such as are not capable of agricultural labor from those who are. They are then allotted to estates by the agent general, under direction of the governor, according to the numbers applied for by the proprietors, the agent being enjoined by law not to remove children under 15 from their parents, nor to separate relatives. The coolies are then indentured for a period of five years to the proprietors to whom they have been allotted. At the expiration of this period they are in general at liberty to engage for themselves as independent laborers; but the policy of the law favors a reindenture, under the supervision of the emigrant agent general, which must be for another term of five years. For reindenturing the cooly receives a bounty of $50. The local law of Trinidad, however, permits reindenturing only from year to year. The minimum of labor required of an able-bodied cooly by the immigration ordinance is five days' work or five tasks a week, seven hours a day if employed at out-of-door work, and ten hours a day if in buildings. For failure to perform the duties imposed upon him, and for various petty misdemeanors, he may be fined not exceeding $24, or imprisoned with hard labor not over one month. He is liable to summary arrest if found without a pass more than two miles from the plantation on which he is employed, and when his indenture has expired he must be able to produce a "certificate of industrial service," importing the completion of his term, signed by the immigration agent; otherwise, though nominally free, he is liable to arrest and detention until identified. The remedies provided for the cooly against his employers seem to be inadequate, while the practical working of the law is still more unequal, since the immigrants possess no political power, which is in the hands of

a few, who are identified with the planting interest and control the magistrates. A principal difficulty which the cooly system has labored under is the inferior quality of the immigrants in many instances. In the eagerness of the planters to obtain coolies when the business commenced, they suffered themselves to be imposed upon by the parties employed in the collection of emigrants, who occasionally sent them the refuse of the cities instead of persons accustomed to agricultural labor. The former class turned beggars and vagabonds, and caused much annoyance and trouble. The small proportion of women among them, and the bad character in general of those imported, have led to immorality among the immigrants, while the sentiment of caste preventing them from intermarrying with the blacks, and the policy of the law fostering reindentures, have tended to keep them a distinct class in the community. A term of service in the colony, however, has been found to improve the coolies, who lose the cringing and slavish demeanor which characterizes them in India. In 1870 a commission was sent out from England to Guiana to investigate the system, from which it may be expected that further ameliorations will result. The Hindoos are nearly all employed on the sugar plantations. They are not so strong as the negroes, who do much of the heavier work, but are averse to continuous labor, nor so quick and intelligent as the Chinese. Their first savings are usually invested in a cow, or in the case of the women in silver ornaments, of which many accumulate a large amount. From the best attainable data, it appears that the average earnings of ordinary laborers (say three fourths of the whole number) are about 28 cents for each day's work, the coolies generally working four or five days a week. Women earn from 16 to 32 cents a day, but do not work so many days a week as the men. Children from 10 to 15 years of age earn from 8 to 16 cents a day. It is estimated that during 1870 wages amounting to over $2,000,000 were paid to coolies, including Chinese. The amount of money carried out of the colony by coolies returning to India, up to the end of 1872, is stated at over $800,000. The number of immigrant depositors in the British Guiana savings bank, June 13, 1870, was 1,817, and their deposits amounted to $138,425 13. Besides Guiana, the principal localities to which Indian coolies have been taken are the islands of the Mauritius, which from its proximity to India takes the lead in the number imported, Trinidad, and Jamaica. The following table exhibits the number arriving in each colony from 1843 to 1872, the number that returned between those years, and the number remaining at the respective dates, with their sex and condition:

PLACE.	Arrived.	Returned.	Remaining.	Males.	Females.	Indentured.	Unindentured.
Mauritius	352,785	104,311	225,607 (Dec. 31, 1868)	147,753	77,854	.....	.....
British Guiana	80,599	8,432	46,623 (June, 30, 1869)	33,614	13,009	37,066	9,557
Trinidad	44,697	4,542	16,385 (Sept. 30, 1869)	.....	.....	9,563	6,822
Jamaica	15,999	3,194	.....	.....	.....	.....	.....
All British West Indies	146,663	16,851	.....	.....	.....	.....	.....

Those remaining in Mauritius constituted more than two thirds of the whole population; 122,449 were employed on sugar estates. Those remaining in Guiana (nearly one third of the population) and in Trinidad include Chinese. Some coolies have also been taken to the French island of Réunion (formerly Bourbon), which, together with Port Natal, between 1857 and 1866, received 18,363 immigrants from India.—The second branch of cooly emigration, that from China, is mostly of a very different character. The first cargo of Chinese coolies was taken in a Portuguese ship from Macao in 1847 to Peru. They were induced to embark by the representation that they were going to Java. Of the 300 that left the port only 175 were landed, who were immediately placed upon a plantation in the interior. The experiment proving satisfactory to the planters, other cargoes were procured, and soon the Cuban planters also sought the same labor. But those first shipped not having returned at the appointed time, and rumors of the fraud that had been practised upon them having spread among the Chinese, it became impossible to obtain voluntary emigrants, and other means were resorted to. The traders organized bands for the purpose of kidnapping coolies, and ships called lorchas, equipped as men-of-war and carrying the Portuguese flag, were sent up the bays and rivers, capturing whole cargoes. Under the influence of cupidity, parents sold their sons, banditti their prisoners, and fugitives from justice bargained themselves away. The traffic carried civil war into the province of Quangtung; rival clans and families took up arms against each other and sold their prisoners to the traders; while the Chinese mandarins and village elders not only connived at these practices, but even for a small fee aided the capture. The example of Macao was soon followed by other ports, and in 1853 Hong Kong, Swatow, Canton, Amoy, Whampoa, Camsingmoon, and smaller places were engaged in the traffic. To the enormity of their capture was added the barbarous treatment of the coolies on the passage and after arrival at the destination. Crowded to excess upon the ships and poorly fed, they died by hundreds on the voyage, while on the plantations they were overtasked, whipped, and practically reduced to slavery. Mutinies both upon the plantations and on shipboard have been frequent, and great numbers have committed

suicide. In 1854, the enormities of the cooly traders coming to the ears of the British government, measures were taken to suppress the traffic at Hong Kong, and soon after British and German vessels were forbidden by their respective governments to engage in the trade. By the regulations at present in force at Hong Kong, which are carefully observed, every emigrant is questioned by the authorities to ascertain if he goes voluntarily. If he chooses to remain, he is permitted to do so upon payment of any advances that may have been made to him and any expenses that may have been incurred in his behalf. A heavy fine is imposed upon persons detaining a cooly against his will, and no one under 25 years of age is allowed to emigrate without the consent of his parents or guardians. The captain of every vessel carrying Chinese passengers is obliged before sailing to make a report of the size of his ship, the accommodations for passengers, the quantity and kind of provisions on board, and the route he intends to pursue; and he is required to carry a surgeon and a supply of medicine. Ship masters or agents must guarantee to the cooly all his legal privileges in the country to which he is taken, and the owners or agents of the vessel are placed under bonds to deliver the coolies at the port for which they are shipped. A register is kept of the name and occupation of every emigrant. The measures taken by the principal European powers, however, did not suppress the cooly trade, but merely restricted it to certain ports, and caused it to disguise itself under the name of the "contract system." These contracts bound the cooly to pay a certain sum per month, or to work a certain time, as a consideration for his passage money. But being unable to read the agreement, the coolies were imposed upon, and made to sign a contract for eight or ten years' labor, in cases where the passage money only amounted to $50. In fact the papers were usually signed in blank, and left to be filled out at the whim of the trader. It soon became evident that this system was a mere cover for the barbarities of the traffic before openly perpetrated, and in 1862 an act of congress was passed which confiscated any American vessel engaged in the transportation of Chinese coolies "to any foreign country, port, or place whatever, to be disposed of or sold, or transferred for any term of years, or for any time whatever, as servants or apprentices, or to be held to service or labor;" and citizens of the United States were forbidden, under penalty of fine and imprisonment, to engage in any manner in such transportation. Previous to 1866 some Chinese coolies were received in the British West Indies, but the convention of that year, in which the Chinese government stipulated that the coolies should be entitled to a back passage at the expiration of five years' service, practically put an end to the emigration to those colonies, since the planters would not accede to the terms. These coolies brought from Hong Kong were protected by the regulations at that port, and in the colony are governed by the same law as the Indian immigrants. The number arriving to the close of 1866 in British Guiana was 12,631; Trinidad, 2,645; all the British West Indies, 16,222. The cooly emigration from Hong Kong from 1861 to 1866 was as follows: To British West Indies, 4,207; Bombay, 2,307; Dutch West Indies, 1,318; Tahiti, 1,035; Honolulu, 789; total, 9,656. The cooly traffic is now, and in its worst form has long been, almost wholly confined to Macao. The ships employed are French, Peruvian, San Salvadorian, Portuguese, and Spanish, and the great markets are Cuba and Peru. In these countries the system seems to have been little if at all ameliorated. The first attempt to regulate the employment of the coolies in Cuba by law was made in the royal order of March 22, 1854, by which they were permitted to become domiciled in the island after the expiration of their term of service, and to obtain papers of citizenship, by complying with the laws for the time being in force on the subject. The greater number availed themselves of the privilege. A new ordinance, however, was issued July 7, 1860, by which it was made an essential condition and special clause to be inserted in every contract, that at the end of his term the cooly should make a new contract of the same character, placing himself under a master or guardian; otherwise he was obliged to leave the island within two months at his own expense. Detailed instructions for the application of this ordinance were made public Dec. 31, 1868; and on April 27, 1871, a royal decree was issued suspending immigration and authorizing the government to cause all Chinese whose terms of service had expired, and who had not renewed their contract, to leave the island at the public expense. This decree, which appears to have been dictated by the participation of the coolies in the insurrection, was not carried into effect. A meeting of planters was held at Havana Sept. 16, 1871, under the presidency of the political governor, to consider the subject of Chinese immigration, in connection with the order of April 27. The governor, in his report to the administrative council of the province, shows that the ordinance of 1860, the object of which appears to have been to retain in the island a body of acclimated agricultural laborers, has not worked well, because the coolies after their term of service escaped to the mountains, or evaded the law by obtaining surreptitiously the necessary police documents, or contracting with fictitious masters. On the other hand, if the ordinance were strictly enforced, he thinks the Chinese would rather emigrate to the United States than contract for a further term. He considers that the good of Chinese immigration overbalances the evil; that it alone can develop the agricultural resources of the island and repair the waste of the rebellion; and that the coolies should be domiciled

on the expiration of their term of service, and should have the right to acquire property under certain restrictions. He advises that, when the state of the island permits, the existing restrictions upon immigration should cease. These views appear to be much more enlarged and liberal than those generally entertained by the planters. In the latter part of 1872 the violation of the contracts with coolies in Cuba, in preventing them from leaving the island at the expiration of their term of service and compelling them to enter into new indentures, was made by the United States the subject of diplomatic representation to Spain. —Peru in 1856 issued a decree prohibiting the traffic "in the violent and cruel manner hitherto prevalent," and regulating the transportation and employment of coolies; but it has been systematically violated, even if not repealed. A recent proof at once of the ill treatment and mismanagement of the coolies, and of the desperate character of those imported, may be found in the riot that occurred in 1870 on the extensive cotton estates of Galpon and Pativilca, about 180 m. N. of Lima, which spread until it embraced 2,000 coolies, and cost the lives of 40 whites and 300 Chinese. In 1869 and 1871 petitions from the coolies in Peru, complaining of the imposition practised to induce them to emigrate, and of the cruelties suffered by them in that country, and asking for the appointment of a Chinese resident at Lima to protect their interests, were forwarded to Prince Kung through the United States ministers at Lima and Peking. The Chinese government in response issued a decree that no merchants of non-treaty powers should be allowed to open an office for hiring laborers, and prohibiting all natives from engaging themselves to such, or going to Macao for that purpose. An order was also issued suspending all emigration to Peru, and the representatives of foreign nations were requested not to permit their flag to be used in the transportation; the governor of Macao being at the same time directed to put a stop to the emigration from that port. When the news of these measures reached Peru, public attention was attracted, and fears were expressed that the importation of coolies would be entirely cut off. It was finally resolved to send an embassy to China, which sailed in the early part of 1873, for the purpose of negotiating general treaties of amity, commerce, and navigation, but with the special object of regulating and establishing the principles on which the immigration of Chinese shall hereafter be conducted, the Peruvian government being willing to extend to them all the guarantees given in the treaties with other Christian nations. The cooly importation in Peru has recently been monopolized by a company formed to carry on the trade; but in 1870 an association of planters, with a capital of $1,000,000, was organized for the purpose of importing their own laborers, with a view to a reduction of the cost. There has long been a large company at Havana engaged exclusively in the importation of coolies, and in 1871 an association of rich planters, with a capital of $1,000,000, was formed in that city to import them for use on their own plantations. The present shipments from Macao consist of prisoners taken in the clan fights, of villagers or fishermen kidnapped by the lorchas, and of those who have sold themselves to pay their gambling debts. There are established cooly brokers in the city, who have a depot or private jail in which the coolies are kept until a cargo is obtained, when they are sold to the highest bidder, bringing from $10 to $27 apiece. They are all forced to sign a contract to serve eight years, for $4 a month and two suits of clothes a year; in Cuba these contracts usually bring about $400 each. In Peru coolies are sold for $350 to $450 apiece, and cost $60 to $80 each delivered at Callao. In Cuba they are mostly employed on sugar plantations; in Peru they are taken to the plantations in the interior, and are also employed on the Chincha and other guano islands. In both countries the mortality is great. In 1870 and 1871 several cases of barbarity on cooly ships occurred, which were made the subject of representation to the governor of Macao by the United States consul at Hong Kong. The only restriction upon the traffic at the former port appears to have been the prohibition of the transportation of coolies in vessels belonging to nations not having treaties with China nor employing cooly labor. A return passage was in 1873 secured to the cooly in the contract of service, and toward the end of that year the traffic was prohibited by proclamation. In May, 1871, Chief Justice Smale, of the supreme court of Hong Kong, in the case of a cooly charged with piracy for having participated in the mutiny on the French ship Nouvelle Penelope, Oct. 4, 1870, in which part of the crew were murdered, declared the cooly traffic, as carried on from Macao, to be the slave trade, and therefore itself piracy, and the rising of coolies to obtain their liberty to be justifiable.—The table given on the following page, compiled from the recent work of Mr. Russell H. Conwell ("Why the Chinese emigrate," &c., Boston, 1871), gives the most complete and accurate statistics attainable of the cooly traffic, from 1847 to 1870. Very few if any of the large number transported have returned to China. In 1869 there were 34,420 coolies in Cuba, and it is estimated that there are about 50,000 in Peru. According to the report of the political governor mentioned above, the number of Chinese arriving in Cuba from June 3, 1847, when the first cargo was received, to Oct. 10, 1871, was 109,029, costing $37,081,280, or $1,545,053 a year. Since the breaking out of the insurrection the importation has fallen off, only 2,715 coolies having arrived at Havana during 1870–'71, while in 1866 15,517 were shipped to that port from Macao. During the year ending Sept. 30, 1871,

DESTINATION.	PORT OF SHIPMENT.	NUMBER OF COOLIES SHIPPED.					Total.
		1847–50.	1850–55.	1855–60.	1860–65.	1865–70.	
Cuba	Macao	1,200	13,700	33,000	30,000	28,000	105,900
"	Canton and vicinity	1,000	17,000	2,000	4,000	1,000	25,000
Total Cuba		2,200	30,700	35,000	34,000	29,000	130,900
Peru and other S. Amer. countries	Macao	.....	1,700	32,000	27,000	20,000	80,700
" " " "	Swatow	.....	22,000	30,000	.....	.....	52,000
" " " "	Canton, Amoy, and Hong Kong	3,000	7,000	9,000	18,000	2,000	39,000
" " " "	Whampoa and Camsingmoon	.....	13,000	13,000	.....	.....	13,000
Total Peru, &c		3,000	43,700	84,000	45,000	22,000	197,700
Indian archipelago and Australia	Macao and ports about Canton	.....	9,000	18,000	2,000	6,000	35,000
Java	Hong Kong and Whampoa	.....	2,000	2,500	.....	.....	4,500
"	Canton	.....	1,000	1,500	.....	.....	2,500
Total Java		.....	3,000	4,000	.....	.....	7,000
Aggregate		5,200	86,400	141,000	81,000	57,000	370,600

9,201 Chinese were imported into Callao, and entered at the custom house at the value of $3,680,400; in 1872 over 13,000 were imported. About 7 per cent. of those embarked die before reaching Callao. According to Peruvian reports, from 1860 to 1872, 192 vessels with 80,354 coolies, were despatched from Macao to Peru, of whom 3,227 perished from shipwreck, and about 5 per cent. from sickness and suicide. In addition to the British West Indies, a few coolies, not included in the table, have been taken to the lesser Philippine islands and some other localities. In 1872 the government of Costa Rica gave permission for the introduction of Chinese coolies into that country, and the first cargo arrived at Punta Arenas Jan. 30, 1873, consisting of 654 coolies, 31 having died on the voyage. (For free Chinese emigration, see China.)—Under this head may be mentioned the employment, within a few years, of South sea islanders as laborers upon cotton and sugar plantations in Queensland, and in the Feejee and Samoa or Navigator's islands, and Tahiti. They are taken chiefly from Savage island, the Gilbert group, Banks islands, and some others. The procuring and employment of these islanders was early regulated by local law in Queensland. A colonial agent is sent with each ship, and a strict investigation is made upon its arrival. The laborers seem to be well treated, and in general to have been properly obtained; many after the expiration of their term of service have gone home, and returned to work again in the colony. Those employed in the Feejee islands and Tahiti, however, are treated with great cruelty, and are obtained by force and fraud, vessels being fitted out to kidnap the islanders, or purchase the prisoners taken in the tribal wars of the natives. After the establishment of the Feejeean government of 1871, it promised to take measures to regulate the traffic, but these promises appear not to have been fulfilled. The vessels employed in procuring the islanders are mostly British. In the early part of 1872 an act of parliament was passed "for the prevention and punishment of criminal outrages upon natives of the islands in the Pacific ocean," and several cruisers were sent to enforce it. Early in 1873 three vessels were seized by virtue of this act, while engaged in kidnapping Polynesians.

COOMASSIE. See Koomassie.

COOPER, a central county of Missouri, bounded N. by Missouri river, and intersected by the Lamine, which is navigable from its mouth to the Blackwater; area, 558 sq. m.; pop. in 1870, 20,692, of whom 3,352 were colored. The surface is hilly or moderately undulating, and occupied in some places by prairies. The soil requires little labor for cultivation, and the mineral wealth is said to be inexhaustible. Mines of bituminous and cannel coal are worked with profit in various quarters; iron and lead ores are extracted from veins near the Lamine; there are several quarries of marble and hydraulic limestone; and from the vicinity of Moniteau creek is obtained a kind of sand used in the manufacture of flint glass, and especially valuable on account of its rarity. The Pacific railroad of Missouri crosses the S. W. corner, and the Booneville branch traverses the county. The chief productions in 1870 were 385,696 bushels of wheat, 1,210,533 of Indian corn, 412,809 of oats, 68,052 of potatoes, 11,579 tons of hay, 227,001 lbs. of butter, 78,571 of wool, and 34,731 of tobacco. There were 6,971 horses, 2,607 mules and asses, 5,383 milch cows, 9,628 other cattle, 21,208 sheep, and 43,813 swine; 5 grist mills, 6 saw mills, 9 manufactories of carriages and wagons, 3 of bricks, 3 of stone and earthen ware, 1 of tobacco and snuff, 1 leather-currying, and 3 wool-carding and cloth-dressing establishments. Capital, Booneville.

COOPER, Anthony Ashley. See Shaftesbury.

COOPER, Sir **Astley,** an English surgeon, born at Brooke in Norfolk, Aug. 23, 1768, died in London, Feb. 12, 1841. His father was curate of the village of Brooke, and his mother, who belonged to the Paston family, was a popular writer in her day. His aptitude for the profession in which he became famous was first shown when he was but 12 years old. A foster

brother met with an accident which tore open his thigh and wounded the artery, and young Astley saved his life before a surgeon could be obtained by binding a handkerchief tightly above the wound. In 1784 he was sent to London to study under the direction of his uncle, William Cooper, the senior surgeon of Guy's hospital, who placed him under the care of Mr. Clive, surgeon of St. Thomas's hospital. At the age of 17 he was admitted a member of the physical society; and having afterward spent some time in Edinburgh studying with Drs. Gregory and Cullen, he was appointed demonstrator of anatomy at St. Thomas's hospital. In 1791 he was associated with Mr. Clive in delivering the lectures on anatomy and surgery. The next year the lectures were divided, Clive confining himself to anatomy, while Cooper devoted himself exclusively to surgery. About this time he married a lady of fortune, and in 1792 he was appointed professor of anatomy at Surgeons' hall, and was reappointed in 1794 and 1795. His first literary productions were two papers in a volume of "Medical Records and Researches" (1798). On the death of his uncle in 1800 he succeeded him as surgeon of Guy's hospital. In this and the following year he read before the royal society two papers on the effect of destroying the membrane of the tympanum, with an account of an operation for the cure of a particular species of deafness, which won the Copley medal for 1802. In 1805 he was elected a fellow of the royal society, and the same year took a prominent part in the formation of the medico-chirurgical society. Having devoted much attention to cases of hernia, he published in 1804 the first part and in 1807 the second part of his celebrated work on that subject. In 1806 he made the first attempt to put a ligature on the carotid artery, and though the case terminated unfavorably, it introduced a bold operation which has since proved successful in many cases. By this time his reputation was established, and in addition to his duties in the hospital and his numerous investigations in a laboratory and dissecting room of his own, he had one of the largest private practices ever enjoyed by a surgeon, his professional income for the year 1813 being no less than £21,000. He introduced a certainty and daring into surgical practice which was never before known. In 1817 he performed the boldest operation ever recorded, that of tying up the subclavian aorta. It resulted unfavorably, but the circumstances justified the experiment. In 1818 he began the publication of a series of medical essays in conjunction with one of his pupils, Mr. Travers, but the plan was given up after two parts of the work had appeared. He was consulted by George IV. in 1820, and in the following year removed a tumor from the king's head, for which he was rewarded a few months later with a baronetcy. In 1822 appeared his work on "Dislocations and Fractures," which showed a great advance in the understanding and treatment of cases of this kind. In 1825 he was obliged from ill health to discontinue his lectures and resign the office of surgeon at Guy's hospital; and the death of his wife in 1827 led him to give up practice and retire to his country estate at Gadesbridge. He soon tired of inactivity, and in 1828 returned to London, married again, and was appointed sergeant surgeon to the king. His health being in a great measure restored, he resumed his practice and his studies, and in 1829 began the publication of his "Anatomy and Diseases of the Breast," which was not completed till 1840. In 1830 appeared a treatise on the "Structure and Diseases of the Testicle," and in 1832 one on the "Anatomy of the Thymus Gland." He was elected president of the college of surgeons in 1827 and again in 1836, vice president of the royal society in 1830, and a member of the French institute in 1832; and among other honors he received the degrees of D. C. L. from Oxford and LL. D. from Edinburgh university. Though he lived expensively and is said to have been very generous to his poor relations, he left a fortune estimated at £500,000. He bequeathed £100 a year to be given every third year to the author of the best essay on some surgical subject. He was buried at his own request beneath the chapel of Guy's hospital. A colossal statue by Bailey has been erected to his memory in St. Paul's cathedral. His nephew, Bransby Blake Cooper, F. R. S., published a "Life of Sir Astley Cooper, Bart., interspersed with Sketches from his Note Book," &c. (2 vols., London, 1843).

COOPER, James Fenimore, an American novelist, born at Burlington, N. J., Sept. 15, 1789, died at Cooperstown, N. Y., Sept. 14, 1851. His father was Judge William Cooper, a man of great energy and high social position, and his mother was the daughter of Richard Fenimore, who belonged to a New Jersey family of Swedish descent. Judge Cooper, owning a large tract of land near Lake Otsego in central New York, established the settlement of Cooperstown, and moved thither with his family in 1790. In this wild frontier region the future novelist spent his boyhood. At the age of 13 he was sent to Yale college, but remained there only three years, when he entered the United States navy, where he continued six years, attaining the rank of lieutenant, and acquiring an experience which he found useful in his literary career. In 1811 he married a sister of Bishop De Lancey of western New York, and soon after resigned his commission and removed to Mamaroneck, a few miles from the city of New York. Declaring his belief that he could improve upon the popular novels of the day, he set about making the experiment, and produced "Precaution," a story of country life on the English model, which was published anonymously in 1819, at his own expense, and attracted little attention. In 1821 appeared "The Spy, a Tale of the Neutral Ground." It

was founded on incidents of the revolution, introduced some historical characters, and was written with so much power and originality that it gained a remarkable popularity at once, not only in this country but in Europe, being translated into almost all the continental languages. It was followed two years later by "The Pioneers," in which are introduced many exciting incidents of frontier life and glowing descriptions of forest scenery. It is the first in order of publication of the famous "Leatherstocking series." "The Pilot," the first of his romances of sea life, appeared also in 1823, being prompted, it is said, by the inaccuracies in the nautical incidents and descriptions of Scott's "Pirate," which had been recently published. This outstripped even "The Spy" in the popular enthusiasm which it excited. "Lionel Lincoln," another story of the revolution, which was comparatively unsuccessful, was published in 1825, followed the next year by "The Last of the Mohicans," in which Cooper continued his fascinating delineations of Indian character and of adventure among the pioneers in the American wilderness. In 1827 he went to Europe, where he remained six years, residing successively in the principal cities and continuing his literary labor. During his first year abroad he published "The Red Rover," the second of his sea stories, and "The Prairie," another of the Leatherstocking tales. To correct the numerous false impressions regarding American characteristics which he found prevailing in England, he published in 1828 "Notions of the Americans, by a Travelling Bachelor," purporting to be a book of travel in the United States. The next year appeared "The Wept of the Wish-ton-Wish," and in 1830 "The Water Witch." He was in Paris at the breaking out of the revolution of 1830, and took great interest in the changes then going on. Soon after this he replied to an article in the *Révue Britannique* severely criticising the government of the United States, and became involved in a controversy in which he wrote a series of letters in the *National* newspaper, defending his country against numerous slanders and misrepresentations. During the same period he wrote "The Bravo" (1831), a novel the scene of which is laid in Venice, and which the author considered his masterpiece. This and his two next works, "The Heidenmauer" (1832) and "The Headsman of Berne" (1833), were intended in part to illustrate his political views, which had been developed in the newspaper controversy in Paris. These discussions were read with interest at home and excited much criticism, not all of which was favorable to the novelist. On his return in 1833 he published "A Letter to my Countrymen," in which he gave an account of the controversy, and complained of the censures which had been passed upon it in this country, and of the general deference paid to foreign opinion. This was followed in 1835 by "The Monikins" and "The American Democrat," in which he satirized the failings of his own countrymen, and gave occasion to fierce assaults upon himself in the newspapers. These were multiplied and intensified by his "Homeward Bound" and "Home as Found" (1838), in which the newspaper editor was caricatured, and the satire upon American peculiarities continued. The strictures of the press were not confined to severe criticism upon the author, but in some cases degenerated into personal abuse, which led him to commence a remarkable series of libel suits. These involved a great expenditure of time and money, but served to fix more clearly than before the responsibility of journals in matters of libel. He says in one of his letters, "I have beaten every man I have sued who has not retracted his libels." During this strife with the newspapers he continued his literary work. He had already published the results of his observations in Europe in the "Sketches of Switzerland" (1836) and "Gleanings in Europe," "France," and "Italy" (1837–'8). In 1839 appeared his "Naval History of the United States," which served to increase the attacks already mentioned. Cooper now returned to the field of fiction, and sent forth in rapid succession "The Pathfinder" and "Mercedes of Castile" (1840), "The Deerslayer" (1841), "The Two Admirals" and "Wing and Wing" (1842), "Wyandotte, or the Hutted Knoll," the "Autobiography of a Pocket-handkerchief," and "Ned Myers" (1843), and "Afloat and Ashore" and "Miles Wallingford" (1844). In 1844 he also published a "Review of the Mackenzie Case," in which he severely censured the course of the commander of the Somers. The same year he became interested in the anti-rent controversy, and began the series of "Littlepage" tales for the purpose of denouncing the anti-rent doctrines, which he regarded as dangerous to society. These consisted of "Satanstoe" and "The Chainbearer" (1845), and "The Redskins" (1846). Maintaining as they did the unpopular side of the question, the real merits of these works were in a measure overlooked. In 1846 he also published "Lives of Distinguished American Naval Officers," forming a fitting companion to the "Naval History." In 1847 appeared "The Crater, or Vulcan's Peak," a romance introducing supernatural characters and incidents, the scene of which was on a reef in the Pacific ocean, and in 1848 "Oak Openings, or the Bee Hunter," a story of woodland life. The last of the series of stories of the sea were "Jack Tier, or the Florida Reefs" (1848), and "The Sea Lions, or the Lost Sealers" (1849). The last of all his novels was "The Ways of the Hour," intended to expose the defects of trial by jury (1850). He had in press at the time of his death a historical work, "The Towns of Manhattan," and was contemplating a sixth Leatherstocking tale. He died somewhat suddenly of dropsy. His later novels did not gain the popularity accorded to some of the earlier ones. The entire series of his novels has been

published in various editions since his death, and they have taken their place at the head of American fiction. Several of them have been translated into nearly all the European and some of the oriental languages.—Personally, Mr. Cooper was a noble specimen of a man, possessing a massive and compact form, a countenance strikingly marked with the indications of intellectual strength, and glowing with manly beauty. His published portraits, though imposing, by no means do justice to the impressive port and vivacious presence of the man. In his social traits, so far as his native reserve and strong predilections would permit, he was magnanimous, hospitable, and kind. Frank, generous, independent, and not over-refined either by native constitution or culture, enemies were as plentifully made as easily reconciled by his singular admixture of opposing qualities. His intellectual life was checkered by much the same variety of lights. There were the elements of genius, originality of invention, keen insight into character, and creative skill, shaded by defects both of original mental structure and of literary culture, not less conspicuous. But taken all in all, no American writer has attained a wider fame. —Susan Fenimore, his eldest daughter, born in 1815, is the author and editor of several popular works, chiefly descriptive of rural life. The first, "Rural Hours," was published in 1850, during the later years of Mr. Cooper's life, and won a permanent and honorable place in literature. It was followed in 1854 by "Rhyme and Reason of Country Life," a fine selection of choice descriptive passages, in prose and verse, relative to country life and its incidents, illustrated with suggestive and graceful notes, and introduced by a genial essay. An annotated edition of an English work, "The Journal of a Naturalist," was published in 1852; and in 1858 she wrote a little book for youth on the character of Washington, the proceeds of which were given in aid of the fund for the purchase of Mt. Vernon. Various popular contributions to periodical literature have also from time to time proceeded from her pen, though generally anonymous.

COOPER, Peter, an American philanthropist, born in New York, Feb. 12, 1791. His maternal grandfather, John Campbell, was an alderman of New York and deputy quartermaster general during the revolutionary war, and expended a considerable private fortune in the service of his country. His father was a lieutenant in the war of the revolution, after the close of which he established a hat manufactory. This period of Peter Cooper's life was one of great anxiety and hard labor, as his father was not successful in his undertakings, and had a large family to provide for. He attended school only half of each day for a single year, and beyond the knowledge thus gained his acquisitions are entirely his own. At the age of 17 he was apprenticed to the trade of coachmaking, and served out his time so much to the satisfaction of his master, that the latter offered to set him up in business, which he declined. He for some time followed his trade; next engaged in the manufacture of patent machines for shearing cloth, which were in great demand during the war of 1812, but lost all value on the declaration of peace; then in the manufacture of cabinet ware; then in the grocery business in the city of New York; and finally in the manufacture of glue and isinglass, which he carried on for 50 years. His attention was early called to the great resources of this country for the manufacture of iron, and in 1830 he erected extensive works at Canton near Baltimore. Disposing of these, he subsequently erected a rolling and wire mill in the city of New York, in which he first successfully applied anthracite to the puddling of iron. In 1845 he removed the machinery to Trenton, N. J., where he erected the largest rolling mill at that time in the United States for the manufacture of railroad iron, and at which subsequently he was the first to roll wrought-iron beams for fire-proof buildings. These works have grown to be very extensive, including mines, blast furnaces, and water power, and are now carried on by Mr. Cooper's family. While in Baltimore he built after his own designs the first locomotive engine constructed on this continent, and it was used successfully on the Baltimore and Ohio railroad. He took great interest in the extension of the electric telegraph, in which he invested a large capital. He served in both branches of the New York common council, and was a prominent advocate of the construction of the Croton aqueduct. His great object was to educate and elevate the industrial classes of the community. He early became a trustee of the public school society, and at the time of its being merged in the board of education was its vice president. He subsequently became a school commissioner; but feeling that no common school system could supply a technological education, he determined to establish in his native city an institution in which the working classes could secure that instruction for which he, when young and ambitious, sought in vain. In furtherance of this object the "Union for the Advancement of Science and Art," commonly called the "Cooper Institute," was erected in New York at the junction of Third and Fourth avenues, between Seventh and Eighth streets, covering the entire block, at a cost of over $650,000, to which Mr. Cooper has since added an endowment of $150,000 in cash. This building is devoted by a deed of trust, with all its rents, issues, and profits, to the instruction and elevation of the working classes of the city of New York. The plan includes regular courses of instruction at night, free to all who choose to attend, on social and political science, on the application of science to the useful occupations of life, and on such other branches of knowledge as will tend to improve and elevate the

working classes. It includes also a school of design for females, now attended by 200 pupils, a free reading room and library, resorted to by about 1,500 readers, galleries of art, collections of models of inventions, and a polytechnic school. The evening schools are attended by 2,000 pupils, mostly young mechanics, who study engineering, mining, metallurgy, analytic and synthetic chemistry, architectural drawing, and practical building. There are also for women a school of telegraphy, which in four years has sent out 307 operators, a school of wood engraving, and a school of photography, all of which are free and are well attended. These schools employ upward of 30 instructors. The receipts of the institute in 1872, from rents and interest on endowment, were about $37,000 and the expenditures $56,000. Mr. Cooper is now (1873), at the age of 82, still vigorous in mind and body, and devotes himself to works of charity and public benefit.

COOPER, Samuel, D. D., an American clergyman, born in Boston, March 28, 1725, died Dec. 29, 1783. He graduated at Harvard college in 1743, studied theology, and at the age of 20 succeeded his father in the Brattle street church, where he remained 37 years, gaining the reputation of one of the most accomplished orators and scholars of New England. He took an influential part among the patriots of the revolution, writing various pamphlets in opposition to the pretensions of Great Britain, and was the person to whom Dr. Franklin sent the letters of Hutchinson. He was one of the foremost in laying the foundation of the American academy of arts and sciences, and became its first vice president in 1780.

COOPER, Thomas, an American scholar and politician, born in London, Oct. 22, 1759, died at Columbia, S. C., May 11, 1840. He was educated at Oxford, afterward studied medicine and law, and was admitted to the bar and travelled a circuit for a few years; but being sent by the democratic clubs of England to the affiliated clubs in France, he took part with the Girondists, and was called to account for his course by Mr. Burke in the house of commons. He wrote a violent pamphlet in reply, the publication of which in cheap form for popular circulation was forbidden by the government. While in France he had learned the secret of making chlorine from common salt, and now became a bleacher and calico printer in Manchester, but his business was unsuccessful. He then came to America, and established himself in Pennsylvania as a lawyer. He opposed the administration of John Adams, and for a violent attack on the president in a Pennsylvania newspaper in 1799 was tried for a libel under the sedition act, and sentenced to six months' imprisonment and a fine of $400. The democratic party coming into power, he was appointed land commissioner for Pennsylvania in 1806. Being appointed to the office of judge, he became obnoxious to members of his own party, and was removed in 1811 on a charge of arbitrary conduct. He then successively occupied the chair of chemistry in Dickinson college, in the university of Pennsylvania, and in Columbia college, S. C., of which last institution he became president in 1820, and in which he discharged also the duties of professor of chemistry and of political economy. On his retirement in 1834, the revision of the statutes of the state was confided to him, and completed just before his death, in 10 vols. 8vo. Dr. Cooper was eminent for the versatility of his talent and the extent of his knowledge. His principal works are: "Information concerning America" (London, 1794); "An English Version of the Institutes of Justinian," contrasting the Roman and American jurisprudence (Philadelphia, 1812; 3d ed., 1852); "Tracts on Medical Jurisprudence" (Philadelphia, 1819); and "Lectures on the Elements of Political Economy" (Charleston, 1826). He was also a vigorous pamphleteer and an admirable talker.

COOPER, Thomas, an English chartist, born in Leicester, March 20, 1805. A shoemaker by trade, he became a schoolmaster, afterward a newspaper reporter, and in 1841 a leader of the chartists in his native town. He was imprisoned from 1842 to 1844 for having lectured in the Potteries during the riots in August, 1842. While in Stafford jail he wrote "The Purgatory of Suicides" and "Wise Saws and Modern Instances" (1845). He afterward published "The Baron's Yule Feast" (1846), "Triumphs of Perseverance" and "Triumphs of Enterprise" (1847), "Alderman Ralph" (1853), and "The Family Feud" (1854). He also edited the "Plain Speaker" and "Cooper's Journal," both penny weeklies. In 1855 he renounced the skeptical views which he had expounded in the latter publication, and has since lectured and preached in favor of Christianity.

COOPER, Thomas Sidney, an English painter, born in Canterbury, Sept. 26, 1803. He early developed a talent for drawing, and was accustomed to sketch from nature without instruction. At the age of 17 he became scene painter to the Canterbury theatre, and during the next seven years he supported himself by scene painting and teaching drawing. In 1827 he visited the continent and settled in Brussels, where he married, and for several years derived a comfortable support from teaching and the proceeds of his pencil drawings. He made the acquaintance of Verboeckhoven, the Belgian animal painter, whose example strongly influenced him in devoting himself thereafter to landscape and animal painting. In 1830 he returned to England, and devoted several years to careful study from nature. His first picture, exhibited in 1833, attracted so much attention that he was commissioned to execute the noted landscape painting which is now in the Vernon gallery. This was the foundation of his subsequent success as an animal painter, in which

department he attained a high place, and in 1845 was elected an associate of the royal academy. He excels in groups of oxen, cows, sheep, or goats, the landscape backgrounds to which are subdued in tone, though in perfect keeping with the general character of the composition. For many years he painted in conjunction with F. R. Lee, who supplied the landscape.

COÖPERATIVE ASSOCIATIONS. See SOCIALISM.

COOPER RIVER, in South Carolina, rises in the central portion of Charleston county, and flowing S. E. unites with the Ashley below Charleston, forming the harbor of that city. It is navigable by small vessels for 30 m. to the Santee canal, 21 m. long, connecting it with the Santee.

COOPERSTOWN, a post village and the capital of Otsego county, N. Y., 60 m. W. of Albany; pop. about 1,800. Situated at the outlet of Otsego lake, which is embosomed in hills 400 ft. high, it presents some of the most beautiful and picturesque scenery in the state. The village is noted as having been the residence of James Fenimore Cooper, by whose father, Judge William Cooper, it was founded, and has of late years become a popular summer resort.

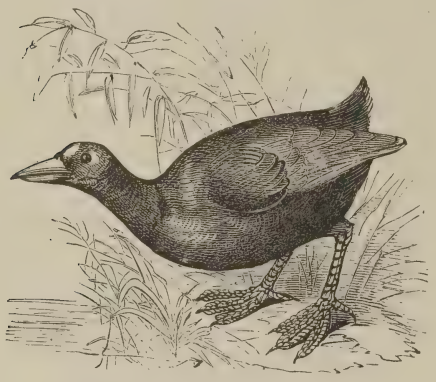
COORG, Koorg, or **Caduga,** a district of S. Hindostan, among the Western Ghauts, bounded N. by Canara and Mysore, E. by Mysore, S. by Malabar, and W. by Malabar and Canara, mainly between lat. 12° and 12° 45′ N., and lon. 75° 25′ and 76° E.; area about 1,600 sq. m.; pop. in 1871, 111,830. It is extremely rugged, mountainous in all parts, covered in some places with forests of sandal and other woods, but in many others overrun with jungle. The most noteworthy feature of the district is the artificial fortifications, the country being intersected by ramparts 15 to 25 ft. in height, and ditches 10 ft. deep and 8 ft. wide. These works are supposed to be very ancient, and in some places they are crowned with enormous trees. The soil is fertile; rice is cultivated for exportation, pepper, cardamoms, and other spices are produced, and great attention is paid to cattle-raising. The climate is temperate, and generally healthy. The inhabitants are Brahmans. It is the custom for brothers of the same family to have their wives in common. There are no manufactures except of coarse cloths for domestic wear. Mercara is the capital. Coorg was formerly an independent principality, and considerably larger than the present district known by that name. It was seized by Hyder Ali in 1773, and parcelled out among many petty chieftains; but in 1787 the son of the deposed rajah succeeded in expelling the invaders. In 1834 the territory was added to the possessions of the East India company. The chief commissioner of Mysore has also charge of the district of Coorg.

COÖS. I. The N. county of New Hampshire, bounded N. by Canada, E. by Maine, and W. by Vermont and Canada, and intersected in the E. part by the Androscoggin river; area, 1,950 sq. m.; pop. in 1870, 14,932. The White mountains occupy the southern part. Among these mountains the Saco river takes its rise, and in the extreme north are the sources of the Connecticut. Near the banks of this stream the soil is tolerably fertile. In the vicinity of some other smaller rivers the land is also cultivated, but the greater portion of the surface is hilly and unproductive. Its name is an Indian word signifying pines, with which a large part is covered. It is traversed by the Portland branch of the Grand Trunk railway of Canada, and the White Mountain railroad runs to the county seat. The chief productions in 1870 were 19,227 bushels of Indian corn, 185,674 of oats, 55,801 of buckwheat, 811,569 of potatoes, 40,795 tons of hay, 419,462 lbs. of butter, 63,666 of wool, and 208,574 of maple sugar. There were 3,147 horses, 5,119 milch cows, 2,259 working oxen, 6,360 other cattle, 14,766 sheep, and 1,463 swine; 39 saw mills, 4 tanneries, 12 manufactories of carriages and wagons, 1 of machinery, 2 of paper, 12 of saddlery and harness, 4 of sashes, doors, and blinds, 1 of shoe pegs, 40 of potato starch, and 3 of tin, copper, and sheet-iron ware. Capital, Lancaster. **II.** A S. W. county of Oregon, bounded W. by the Pacific; area, 1,500 sq. m.; pop. in 1870, 1,644, of whom 13 were Chinese. It is watered by Coös and Coquilla rivers. The Umpqua mountains are on the E. border. Coal and veins of gold and copper have been found. Coös bay furnishes a good harbor. A railroad is in progress from the bay to Roseburg, in the adjoining county. The soil is good, but lumber is the chief staple. The chief productions in 1870 were 2,802 bushels of wheat, 1,859 of Indian corn, 3,386 of oats, 1,182 of barley, 2,044 of peas and beans, 1,165 of potatoes, and 644 tons of hay. There were 347 horses, 949 milch cows, and 1,412 swine. Capital, Empire City.

COOSA, a central county of Alabamá, bounded S. W. by Coosa river; the former area was 860 sq. m., but a portion has recently been taken to form Elmore county; pop. in 1870, 11,945, of whom 3,394 were colored. The surface is hilly, and the soil very productive. The pasture lands are excellent, and perennial springs are found in almost all parts. Numerous small streams afford an abundance of water power. Lead and iron mines have been opened; statuary granite of very superior quality is found. In the northern part is an immense quarry of beautiful marble, extending through Coosa and Talladega into Calhoun county. The chief productions in 1870 were 36,066 bushels of wheat, 262,638 of Indian corn, 20,513 of oats, 30,508 of sweet potatoes, 3,893 bales of cotton, and 91,961 lbs. of butter. There were 1,406 horses, 1,184 mules and asses, 3,779 milch cows, 528 other cattle, 4,546 sheep, and 12,689 swine; 1 cotton mill, several flour and saw mills. Capital, Rockford.

COOSA, a river of Georgia and Alabama, 350 m. long. It is formed by the union of the Etowah and Oostenaula at Rome, Ga., flows S. W., and after passing the Ten islands in Alabama turns S. and S. E., and joins the Tallapoosa to form the Alabama in Elmore co., between Wetumpka and Montgomery. From Rome to the Ten islands in Alabama, and below Wetumpka, it is navigable by steamboats. Between the Ten islands and Wetumpka the shoals which obstruct the channel at short intervals prevent the passage of any vessels except flat-boats.

COOT, a lobe-footed bird of the order *grallatores*, family *scolopacidæ*, and genus *fulica*. In this genus the bill is shorter than the head, strong, straight, and elevated, forming a broad shield on the forehead; the wings are short;



American Coot (Fulica Americana).

the tail is very short and rounded; the tarsi are shorter than the middle toe; the toes are long, united at the base, lobed on each side, the inner toe with two, the middle with three, and the outer with four rounded membranous lobes; the hind toe is lobed its whole length. There are about a dozen species of the genus, scattered over the world, migrating from north to south in winter. The American or cinereous coot (*F. Americana*, Gmel.) is about 14 inches long, with an extent of wing of 25 inches; bill long, the back 1⅓ inch; weight about 1 lb. The head is small, neck slender, body rather full; feet strong, tibia bare a little above the joint; the plumage is soft and blended. The bill is grayish white, with a dusky spot near the end; the general color of the upper parts is deep bluish gray, blackish on the head and neck, and olivaceous on the shoulders; the quills are grayish brown, with darker tips; edge of the wings, outer margin of first quill, tips of outer secondaries, and lower tail coverts, white; tail brownish black; under parts light bluish gray. They are found throughout North America, and in New England in the autumn, retiring south about November. Their favorite resorts are the borders of ponds and rivers lined with thick reeds, to which they can fly on the approach of danger; they swim, dive, fly, and run well; they rise, however, with difficulty, fluttering the wings and striking with the feet to assist; they fly high, with quick motion of the wings. They feed, especially in the morning and evening, near the edge of the water and in the open lands bordering on the streams and lakes. The food consists of aquatic insects and plants, mollusks, small fish, worms, seeds, and even tender grass and leaves. In the south they are seen in flocks of several hundred. They probably breed in the northern states; the nest, built of decayed vegetable matter and sticks, is placed near the water among the reeds; it is sometimes carried away by inundations, when it floats without injury to the eggs or displacing the female; the eggs are from seven to ten in number, ash-gray in color, spotted minutely with black, and the young take to the water as soon as hatched. A common name for this species is the mud hen. They are abundant in the New Orleans market in winter, and are much used as food by the poorer classes, who skin instead of plucking them.—In New England the name is improperly given to several species of duck, especially to those of the genus *oidemia;* among the species thus named are the scoter duck (*O. Americana*, Swains.), white-winged or velvet duck (*O. fusca*, Swains.), and black or surf duck (*O. perspicillata*, Flem.).

COPAIBA. See Balsams.

COPAIS, or **Topolias,** a celebrated lake in Bœotia, the largest in Greece, 47 m. in circumference. It is formed by the Cephissus and the numerous small streams which descend from the surrounding hills. Its waters empty into the Euripus through subterraneous passages in the surrounding limestone. (See Bœotia.)

COPAL, the resinous juice of the *rhus copallina* of Mexico and the *elæocarpus copalifer*

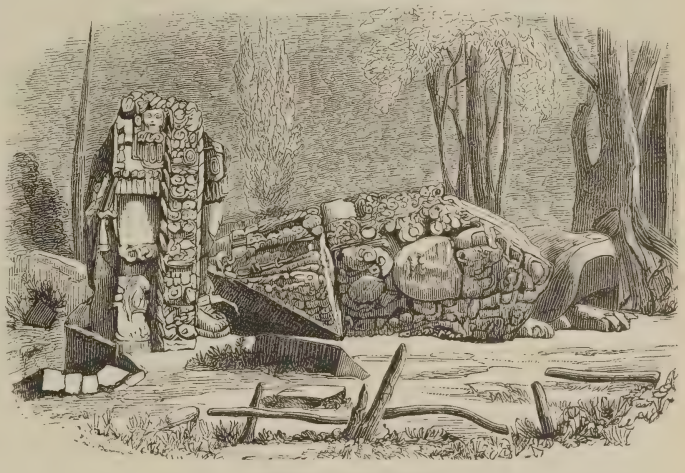


Copal (Rhus copallina).

of India. It is obtained by the natives by cutting a notch in the tree, in which it collects.

Another variety of the copal tree is found on the coast of Guinea, where lumps of the resin are gathered from the sands by the negroes. Copal is of various colors, from a pale yellow hue to a dark brown, and of different degrees of transparency. It often includes insects and animal remains. It is harder than other gums, breaks with a conchoidal fracture, and has neither odor nor taste. An excellent and durable varnish is prepared from it. It melts with the heat of a spirit lamp, giving out an oily substance, and becoming deeper in color until it is converted into charcoal. Copal is not easily soluble in alcohol, the greater part merely swelling up and softening; but pulverized and then dried at a moderate heat, it dissolves in alcohol of 96 per cent. Camphor first dissolved in the alcohol increases its power of taking up the copal. It is much more soluble in ether, and the solution may be diluted with alcohol without the copal precipitating. Different kinds of copal are differently affected by ether; some dissolve readily, others with great difficulty. Varnishes of different qualities may be thus obtained by the same solvent. After ether, some of the volatile oils are the best solvents of copal, as the oils of rosemary, lavender, and spruce. The oils of petroleum and turpentine have little action on crude copal. When fused, it dissolves more easily, but produces inferior qualities of varnish. Its composition, according to Dr. Ure, is carbon 79·87, hydrogen 9, oxygen 11·1; being of hydrogen 7·6 in excess above the quantity necessary to form water with the oxygen. An excellent recipe for varnish is the following given by Böttger: 1 part of camphor is dissolved in 12 parts of ether; 4 of copal are then added, and allowed to swell in it, when 4 parts of anhydrous alcohol and $\frac{1}{4}$ part of rectified oil of turpentine are added. It is stated by Dr. Wight that on the Malabar coast a variety of this resin, called *piney dammar*, is made into candles which diffuse an agreeable fragrance, give a clear light with little smoke, and consume the wick without requiring snuffing.—A fossil copal is described in the books of mineralogy, which resembles the resin in its hardness, color, lustre, transparency, and difficult solubility in alcohol. It is found in the blue clay near London, and is called Highgate resin; and also in flattened drops on calc spar on the walls of a trap dike at an old lead mine in Northumberland. A similar fossil has been also obtained in the East Indies. The composition of the mineral is carbon 85·41, hydrogen 11·78, oxygen 2·67, ashes 0·136.

COPAN, a small town of Honduras, Central America, in the department of Gracias, 120 m. W. by N. of Comayagua, on a river of the same name, an affluent of the Motagua. It gives its name to the wonderful ruins in its vicinity, the remains of an ancient city, which cover a densely wooded tract more than 2 m. in length along the banks of the stream.



A Fallen Idol at Copan.

Among them are the walls of a vast building, 624 ft. long, supposed to have been a temple, a plaza paved with well squared stones, a tower or terrace with a grand stairway of many steps descending to the river, colossal monolithic statues elaborately carved, and other sculptures. These ruins excited the wonder of the Spanish conquerors, who sought in vain to learn something of their origin from the natives. They were described with great accuracy in 1576 by the licentiate Palacios. A full account of them is given in Stephens's "Central America." (See American Antiquities.)

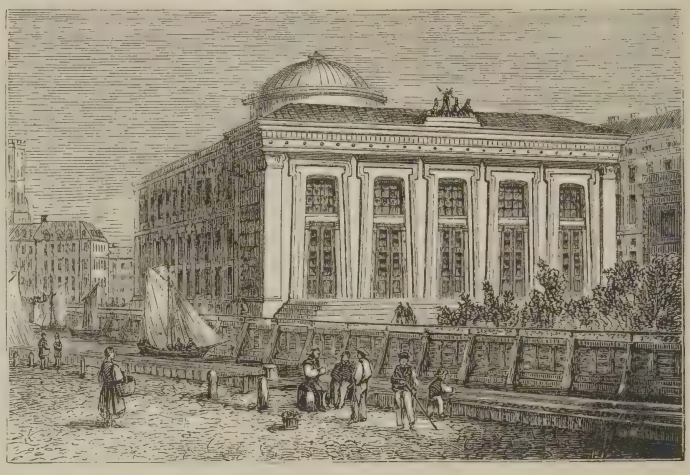
COPARTNERSHIP. See Partnership.

COPE, Charles West, an English painter, born in Leeds in 1811. He is the son of an artist, studied in the royal academy, and in 1831 exhibited his first picture, the "Holy Family," which was purchased by Mr. Beckford. In 1843 his cartoon of the "First Trial by Jury" gained a prize of £300 in the Westminster hall competition; and in the succeeding year he obtained a commission to paint one of the six frescoes for the new house of lords. In 1844 he was elected an associate, and in 1848 a member of the royal academy. He also received commissions to execute additional designs for the new palace, illustrative of incidents in the history of England. His eight frescoes in the peer's corridor illustrate the historical incidents of the reign of Charles I.

Among his later productions are: "Parting of Lord and Lady Russell" (1861), "Convalescent," and "Scholar's Mate" (1862). He is equally successful in painting historical and domestic scenes.

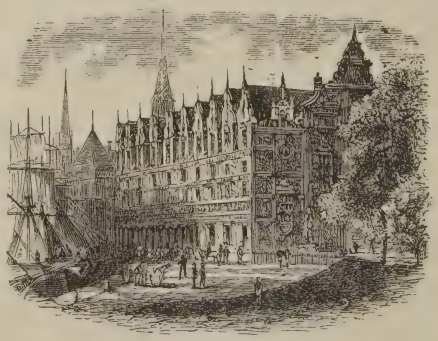
COPE, Edward Drinker, an American naturalist and comparative anatomist, born in Philadelphia in 1840. He became professor of natural science in Haverford college, Pa., in 1864, and resigned from ill health in 1867, and devoted himself to zoölogy and geology. Since 1859 he has contributed to scientific journals more than 100 papers, among which are contributions to the herpetology of tropical countries; monographs of the ichthyology of Pennsylvania, Virginia, North Carolina, Michigan, &c.; "Primary Groups of Batrachia Anura" (1865); "On the Arciferous Anura" (1866); reports on the reptilia of the several exploring expeditions (1862–'8); "History of the Cetacea of the Eastern North American Coast" (1866); "Synopsis of the Extinct Cetacea of the United States" (1867–'8); "Systematic Arrangement of the Lacertilia and Ophidia" (1864), and "of the Class Reptilia" (1870); and "Origin of Genera" (1868). In 1868–'9 he investigated the greensand of the cretaceous formation of New Jersey, and discovered several new genera and species, which he described in "A Synopsis of the Extinct Batrachia, Reptilia, and Aves of North America" (4to, Philadelphia, 1869; published also in vol. xiv. of the "Transactions of the American Philosophical Society"). His paper on the "Systematic Relations of the Fishes," in the annual volume for 1871 of the American association for the advancement of science, is founded on the study of 1,000 skeletons, 800 of which were collected by the anatomist Prof. Joseph Hyrtl of Vienna, and are now in Prof. Cope's museum. His paper "On the Hypothesis of Evolution, Physical and Metaphysical," appeared in "Lippincott's Magazine" for July, August, and September, 1870, and is No. 4 of the "University Series of Valuable Lectures and Essays" (New Haven, 1871). In August, 1871, he read a paper before the American association for the advancement of science "On the Method of Creation, or the Laws of Organic Development," which he expanded in a series of four articles in "The Penn Monthly Magazine" for 1872. Besides the above, and other scientific papers, he has written reports on the "Extinct Vertebrates of the Eocene of Wyoming and Nevada" (1872), and on "New Vertebrata from the Tertiary of Colorado" (1873).

COPENHAGEN (Danish, *Kjöbenhavn*, merchants' harbor; Lat. *Hafnia*), the capital of Denmark, situated partly on the island of Seeland in the Baltic, and partly on the island of Amager; lat. 55° 41′ N., lon. 12° 34′ E.; pop.



The Thorwaldsen Museum.

in 1871, 181,291, all Lutheran, with the exception of 3,000 Jews, 1,100 Catholics, and about 1,000 of other sects. Besides several suburbs, it consists of three principal divisions, viz.: the old city or West End, the new city or Frederiksborg, on the island of Seeland, and Christianshavn, on the island of Amager. The city is protected by the fortress of Frederikshavn. The channel between the main island and Amager constitutes the harbor, which is very capacious. The city contains numerous public squares, churches, and hospitals, several theatres, an arsenal, exchange, and four royal palaces. The centre of the city is formed by the Kongens Nytorv, a large and handsome square, from which issue the



Exchange.

principal thoroughfares, the finest street being the Bredgade (broad street), which leads directly to the esplanade of the citadel. The castle or palace of Rosenborg, partly surrounded by a public garden, was commenced in 1604, but has long ceased to be a royal residence, and is devoted to the chronological collection of the Danish kings, one or more rooms being devoted to the reign of each, commencing with Christian IV. (1588–1648). The old palace of Christiansborg was at the time of its destruction by fire in 1794 one of the handsomest palaces in Europe. The new palace, opened in 1828, when partly finished, has never been used as a permanent residence, being reserved mainly for festivities and for the use of the *Things* or houses of parliament. It is situated on a little island bounded by the harbor and by canals, crossed by several bridges, and is the most conspicuous structure in the city. It contains a splendid banqueting hall, the façade being ornamented by four colossal bronze statues by Thorwaldsen, representing Hercules, Minerva, Nemesis, and Æsculapius. The intention was that the four should symbolize strength, wisdom, justice, and truth; but when the order reached the sculptor at Rome, instead of *Sandhed*, truth, he read it *Sundhed*, health, and so Æsculapius came to be one of the four. There are other famous works by Thorwaldsen, and the palace is also temporarily used for the royal picture gallery. The former palace of Frederiksborg, with a fine park, is used as a military academy. Amalienborg, the principal royal residence, near the Kongens Nytorv, consists of four palaces, erected by different nobles and purchased by the king after the destruction of Christiansborg. One of these is occupied by the king, one by the queen dowager, one by the crown prince, and the last by the foreign office. The former royal palace of Charlottenborg, on the principal square, is occupied by the academy of fine arts. The principal church is that of Our Lady (*Vor Frue Kirke*), in which are several celebrated works of Thorwaldsen, including the original marble statues of the twelve apostles. The original church, built before the 12th century, was destroyed by the great fire of 1728; the second one was destroyed in the bombardment by the English in 1807; the present structure was finished in 1829. Trinity church has a remarkable round tower, originally intended as an observatory, and occupied for that purpose for about 200 years. Our Saviour's church has a beautifully sculptured alabaster font, and a spire with an external staircase terminating under a ball which will contain 12 persons. The so-called marble church was begun in 1746, but the cost of construction so far exceeded the means that the undertaking was abandoned, and it is now a mere ruin. Thorwaldsen's museum was erected by the city (1838–'48) to contain the collection of his works and other objects which he had bequeathed to the public, and also to serve as his mausoleum. The museum of northern antiquities, founded in 1807, and for 50 years (1815–'65) under the charge of one director, Mr. C. Thomsen, was the first in which a systematic effort was made to show the three stages of civilization characterized respectively by the use of stone, bronze, and iron for implements. It is in this respect by far the best in Europe; it is also without a rival in its collection of gold ornaments. The university, founded in 1478, has about 1,200 students, and has become noted for the ability of several of its professors. Connected with it are an observatory, botanical garden, surgical academy, polytechnic institute, and museum of natural history; the library contains 200,000 volumes and 4,000 rare MSS. The royal library ranks among the largest in Europe, having more than 500,000 volumes and 20,000 MSS. The Classen scientific library, deriving its name from two brothers who founded it, has about 30,000 volumes. The ethnographic museum is among the largest and best arranged of its kind. Its object is to illustrate the civilization of non-Scandinavian peoples anterior to the classic period, and its development as compared with that of existing savage tribes. There are many other educational, scientific, literary, and musical institutions. Among the benevolent institutions, besides the hospitals, are the *Varton*, a large red brick building, and four structures containing tenement apartments for workmen of different trades, with infant nurseries, and a large and well arranged institution for the blind. Among the places of amusement are the royal or national theatre on the Kongens Nytorv, which enjoys a considerable subvention from the government; the Tivoli, a kind of public garden, frequented by all classes, where the concerts are very good; and the Alhambra, a similar but smaller establishment. There are several pleasant promenades, the best of which is the Langlinie overlooking the entrance of the harbor. The walk around the ramparts is fine, but those of the citadel are only accessible to the holders of annual tickets. Among the public buildings recently erected are the national bank (1866–'9), the freemasons' lodge (1869–'70), and the palace of the industrial exhibition (1870–'72).—The city is connected by railway with the ports of Elsinore, 20 m. N., and with Korsör, 60 m. S. W. There is regular steamboat communication with foreign ports, and in 1870 nearly 8,000 emigrants sailed from the port for the United States. Street railways and omnibuses traverse the principal thoroughfares. Copenhagen is the centre of the entire commerce of Denmark. Its trade suffered much during the Schleswig-Holstein war, but has since revived. At the beginning of 1872 there were owned here 382 merchant vessels, of which 48 were steamers, with an aggregate tonnage of 49,771. The principal imports are timber, pitch, and tar from Sweden and Norway; flax, hemp,

masts, sail cloth, and cordage from Russia; sugar, chiefly from the West Indies and South America; coffee and tobacco from America; wines and brandy from France; coal, iron, machinery, hardware, tea, and cotton twists from England. The principal exports are corn, rape seed, butter, cheese, beef, pork, horses, cattle, wool, hides, skins, and bones. The principal manufacture is that of porcelain; but the watches and chronometers of Jules Jurgensen are famous, being among the best in the world. The ship building is of considerable importance.—Copenhagen was founded probably in the 11th century. It was originally a fishing village, but as early as the close of the 12th century it became a busy trading town, and owed its first prosperity to the famous bishop Absalon. In 1204 it obtained a city charter, and in 1443 was made the seat of government. During the wars of the Hanse towns it was frequently besieged and suffered heavily. It was several times partly destroyed by fire, and over 22,000 persons died in 1711 from the plague. In 1801 (April 2) the great naval action in which Nelson defeated the Danes was fought near Copenhagen. In 1807 the city was bombarded by the British under Lord Cathcart for three days (Sept. 2–5), when 350 buildings were destroyed entirely, 2,000 more rendered uninhabitable, and 2,000 persons killed. In 1853 the cholera carried off nearly 5,000 persons.

COPERNICUS (Polish, KOPERNIK), **Nikolaus,** a Polish or German astronomer, discoverer of the system of planetary revolutions, born at Thorn, in Prussia, Feb. 19, 1473, a few years after the annexation of the town to Poland, died at Frauenburg, May 24 (according to others, June 11), 1543. After receiving the rudiments of a classical and scientific education in his father's house, he studied medicine and received his doctor's diploma at the university of Cracow, and also devoted himself to mathematics and astronomy, to which he was incited especially by the example of Regiomontanus. He subsequently spent several years in Italy, studying astronomy under Domenico Maria at Bologna, and afterward at Rome, where he gained a reputation rivalling that of Regiomontanus. He taught mathematics at Rome with eminent success, and about 1503 returned to Prussia, having previously been made canon of Frauenburg by his uncle the bishop of Ermeland. Having overcome the opposition which was made to his settlement by the conflicting claims of others, he not only attended faithfully to the duties of his clerical office, but also gave free medical advice to the poor, and at the same time prosecuted astronomical labors. Struck with the complexity of the Ptolemaic system of the universe, he sought to explain the planetary motions upon a more rational principle. After extending his researches over all the then known systems, he came to the following conclusions: The sun and stars are stationary; the moon alone revolves about the earth; the earth is a planet whose orbit is between Venus and Mars; the planets revolve about the sun; and the apparent revolution of the heavens is caused by the rotation of the earth on its axis. His discoveries had attracted the attention of astronomers, who were eager to see the data and proofs, while Copernicus, though he had already finished the composition of a work relating to his theories, hesitated to publish it till the most thorough investigations had satisfied him as to the perfect accuracy of its principles and details. His six books *De Orbium Cœlestium Revolutionibus* were printed at Nuremberg in 1543 (later editions, Basel, 1566, and Amsterdam, 1617 and 1640), under the care of Rheticus, one of his disciples; and the first copy of the work was placed in the hands of Copernicus on the very day of his death. Besides his principal work, he published minor treatises on morals, trigonometry, and coinage. The tower from which he made his observations, and the ruins of a hydraulic machine constructed by him, still exist at Frauenburg. Monuments were raised to his memory at Cracow in 1822, with the appropriate inscription, *Sta, Sol, ne moveare,* and at Thorn in 1853; and a colossal statue by Thorwaldsen at Warsaw in 1829, Poland claiming Copernicus as one of her sons. His life has been written by Gassendi (Paris, 1654), Westphal (Constance, 1822), Czynski (Paris, 1846), and Prowe (1853). In 1872 a prize of 500 thalers was offered for the best biography of him. The 400th anniversary of his birth was celebrated at Posen, Feb. 19, 1873.

COPIAH, a S. W. county of Mississippi, lying W. of Pearl river, which at times is navigable thus far for small boats; former area, 960 sq. m., but in 1870 a portion was taken off to form Lincoln county; pop. in 1870, 20,608, of whom 10,370 were colored. It is watered by bayou Pierre. The New Orleans, Jackson, and Great Northern railroad passes through it. The name in the Indian language means screech owl. The chief productions in 1870 were 408,003 bushels of Indian corn, 17,864 of peas and beans, 55,725 of sweet potatoes, and 15,653 bales of cotton. There were 2,677 horses, 2,049 mules and asses, 4,189 milch cows, 8,492 other cattle, 5,845 sheep, and 20,622 swine; 12 saw mills, 1 tannery, 1 cotton mill, 1 woollen mill, 6 carriage factories, and 1 turning and carving establishment. Capital, Gallatin.

COPIAPÓ, a city of Chili, capital of the province of Atacama, on the right bank of a river of the same name, about 30 m. from its mouth, 425 m. N. of Santiago; pop. about 15,000. It is the centre of the most important mining district of Chili. The town is regularly laid out, with a large plaza, four long streets and about 20 smaller ones crossing at right angles. At the E. end is a suburb occupied by the poorer classes, and the W. end is composed of elegant villas with beautiful gardens. In consequence of the frequency of earthquakes, the houses are of slight construction, being built mostly of wood

covered with mud and lime. So little rain falls that this is sufficient for protection, and even the principal church is built in this way. The only solid edifice in the city is an old church, the massive walls of which have enabled it to withstand the most violent earthquakes. In the plaza is a bronze statue of Juan Godoy, who discovered the celebrated silver mines of Chañarcillo in 1832. Copiapó has a college and several convents. Among its industrial establishments are a number of works for the reduction of silver ore, iron founderies, and factories for the making of crushing mills and other machinery used in connection with the mines. It has a considerable trade through its port, Caldera, with which it is connected by railway. Its old port, the village of Copiapó, at the mouth of the river, lat. 27° 20′ S., and lon. 71° 2′ W., is now little used.

COPLAND, James, an English physician, born at Deerness, in the Orkney islands, in 1792, died July 12, 1870. He studied medicine at Edinburgh, visited the principal hospitals of Europe, and spent some time in Africa, investigating diseases peculiar to that continent. In 1820, after his return to London, he became a member of the royal college of physicians. From 1822 to 1828 he was editor of the London "Medical Repository," and from 1824 to 1842 a lecturer on pathology and the practice of medicine, first at the Windmill school, and next at the school of the Middlesex hospital. He published "Outlines of Pathology and Practical Medicine," "Elements of Physiology," and a "Dictionary of Practical Medicine," in four volumes, which was reprinted in the United States and translated into German. In 1850 he published an essay on palsy and apoplexy.

COPLESTON, Edward, D. D., an English bishop, born at Offwell, Devonshire, Feb. 2, 1776, died near Chepstow, Oct. 14, 1849. He was educated at Oxford, in 1802 was appointed professor of poetry there, and in 1813 published his lectures under the title of *Prælectiones Academicæ*. In 1814 he became provost of Oriel college, in 1826 dean of Chester, and in 1827 bishop of Llandaff and dean of St. Paul's, London. He contributed to the "Quarterly Review," and wrote an "Inquiry into the Doctrines of Necessity and Predestination" (1821).

COPLEY, John Singleton, an American painter, born in Boston, July 3, 1737, died in London in September, 1815. Without the aid of instructors, and before seeing any tolerable picture, he painted pieces which were highly admired. In his 17th year he adopted painting as a profession, and in 1760 he sent to the royal academy a picture of a "Boy and Tame Squirrel," the coloring of which was deemed exquisite. He obtained a considerable income as a portrait painter, till in 1774 he visited Italy, where he studied especially the works of Titian and Correggio. In 1775 he established himself in London, and in 1783 was chosen a member of the royal academy. The most celebrated of his works is the "Death of Lord Chatham," now in the national gallery, representing the orator falling after his speech in opposition to the American war, and containing also portraits of the most distinguished peers. It was engraved by Bartolozzi on a plate of 30 inches by 22, and impressions were sent by the painter to Washington and John Adams. In 1790 he was commissioned to paint the large picture, now in the council chamber of the Guildhall, of the "Siege and Relief of Gibraltar." Some of his most esteemed paintings are portraits of several members of the royal family, "Major Pierson's Death on the Isle of Jersey," "Charles I. demanding the five Impeached Members in the House of Commons," and the "Surrender of Admiral de Winter to Lord Duncan." They are remarkable for correctness of drawing and brilliancy of coloring. His best works were collected by his son Lord Lyndhurst, and many of them have been engraved. A sketch of his life and works, by A. T. Perkins, was published in Boston in 1873.

COPPER (Lat. *cuprum*, from Cyprus the island, in which the ores of this metal were mined by the ancient Greeks), one of the first metals known to man. Tubal Cain, the seventh in descent from Adam, we are told, was "an instructor of every artificer in brass and in iron." In the book of Job we read that "copper is molten out of the stone." Cheops, an Egyptian king of the fourth dynasty, it is recorded, worked a copper mine in the peninsula of Sinai. The ancient Egyptians employed an alloy of it for working hard stones, and Wilkinson suggests that they may have had the art of hardening it. The Syrians and Phœnicians, as also the Greeks and Romans, consumed the metal largely in the manufacture of monuments and statues of bronze. The single colossus of Rhodes, after having lain in fragments for nine centuries, is said to have required 900 camels to convey its pieces away. The ores seem, therefore, not only to have been worked extensively by the ancients, but the skill and facilities for producing large castings appear to have been quite equal to those possessed by the moderns. Besides its use as an alloy in the manufacture of bronze, it was also employed in coin in the pure state. The metal itself was probably first discovered, as it is now found, in a native state, and by the melting of this the nature of the rich ores associated with it came to be known. The obscure races that inhabited this continent prior to the Indians possessed an acquaintance with it, as appears from the various small utensils of copper found in the ancient mounds of the western country; and the extensive mining works, probably of the same people, at Lake Superior (see Copper Mines), testify to the knowledge of it possessed by some ancient race of greater skill than the Indians. The Aztecs of Mexico made use of chisels and axes of copper, some of which are found with the large half-finished blocks of granite in the quarries of Mitla; and these

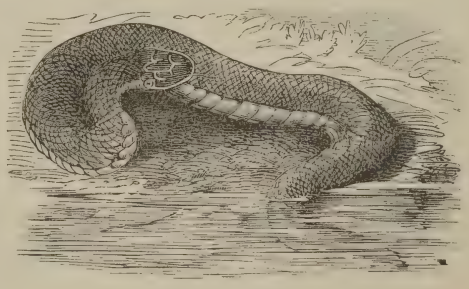
naturally suggest the possibility of these people having had the art of giving to the metal hardness adapted to its use for quarry tools. Prescott points out other resemblances in their works to those of the Egyptians. The Peruvians, too, used copper for the same purposes; and Humboldt gives the composition of a chisel found in a silver mine opened by the incas near Cuzco, viz., 94 per cent. copper and 6 per cent. tin. This is almost identical with the composition of the chisel found by Wilkinson at Thebes, which was 94 per cent. copper, 5·9 per cent. tin, and 0·1 per cent. iron. The Scandinavian tumuli, in Denmark, have afforded similar collections of copper utensils of very remote antiquity, many of which are preserved in the museum of Copenhagen; among them are knives, daggers, chisels, hammers, wedges, axes, &c. There are swords and knives with blades of gold and cutting edges of iron; some are of copper, also similarly faced, the iron appearing to be the rare and choice metal. In the work of J. Arthur Phillips and John Darlington, "Records of Mining and Metallurgy," are given many analyses made by Mr. Phillips of coins and sword blades, some of the former dating back as far as 500 B. C. In the most ancient coins the alloy is, copper 62 to 72 per cent., tin about 7, and lead from 19½ to 29·32 per cent. Tin is almost invariably present. Zinc first appears in specimens about the commencement of the Christian era. The cutting instruments are uniformly composed of copper and tin, generally about one part of the latter in ten, and sometimes lead forms a small part of the alloy. During the middle ages there is little recorded concerning the working of copper mines and the use of the metal. Copper has been obtained in recent times from the mine of Rammelsberg, near Goslar, in the Hartz mountains, which was worked in the 10th century. The Swedish mine of Fahlun competed with the above in the production of copper in the 12th century; and in the next century the mines of Thuringia were worked. In Great Britain, the Parys mine in Anglesea, it is believed, was worked by the Romans. This was very productive in the latter part of the 18th century, causing by the abundance of its ores the price of the metal to be considerably reduced. In 1799, when it was nearly exhausted, the price of copper rose again to £128 per ton. The rich veins at Newlands near Keswick were worked in 1250; and in 1470, as appears by a charter granted by Edward IV., the business was extensively carried on. The metal was obtained at Ecton hill in Staffordshire previous to its discovery in Cornwall. The mines of Cornwall, worked for tin at very early periods, appear to have been little regarded for the copper ores they contained before the middle of the 18th century.—Copper is a metal remarkable for its fine red color bordering upon yellow, and for its peculiar and disagreeable taste and smell when rubbed. Obtained in very thin films on the surface of glass, by precipitation from its solution in ammonia by the aid of a ferrous salt, it is transparent, and by the light transmitted through it appears green, but by reflected light red. Its specific gravity is from 8·8 to 8·96, varying according to the method of its manufacture. Its hardness is from 2·5 to 3, being about the same as that of gold and silver. It is so ductile that it is hammered into very thin sheets and drawn out into fine wire. In tenacity it ranks next to iron, a wire $\frac{1}{13}$ inch in diameter sustaining a weight of 300 lbs. Its power of conducting heat is 2½ times that of iron. It expands, when heated from 32° to 212° F., $\frac{1}{518}$ of its length. It is a ready conductor of heat, and one of the best conductors of electricity. It melts at a full red heat, estimated at from 2,200° to 2,500° F., and at a white heat the vapors passing from it burn with a green flame. The equivalent weight of copper is 31·7, and its symbol is Cu. It crystallizes in forms of the isometric or tesseral system. Copper undergoes no change in dry air, but when exposed to moist air it becomes slowly covered with a greenish coating, which is a hydrous carbonated oxide of the metal. When heated to redness in contact with the air, it becomes covered with a reddish scale, which is a peculiar oxide, to be noticed further on. Copper is readily attacked and dissolved by nitric acid, with the evolution of nitric oxide gas, and the formation of a blue solution of nitrate of copper. Hydrochloric acid does not attack the metal unless the air has access, when it dissolves, forming a chloride. Dilute sulphuric acid has no action on copper, but it decomposes the concentrated acid with the aid of heat, with the evolution of sulphurous acid and the production of sulphate of copper.—Copper forms two principal compounds with oxygen, the black or cupric oxide, often called protoxide, CuO, and the red or cuprous oxide, called also suboxide or dinoxide, Cu_2O. Both of these are found in nature constituting ores of copper, and may also be obtained artificially. The protoxide dissolves readily in acids, giving rise to salts white and blue or green in color; and the oxide itself, though black when anhydrous, is blue when combined with water. The red or suboxide, which is ruby or vermilion red in color, yields a yellow hydrate, which readily absorbs oxygen from the air and passes to the state of protoxide. By most acids it is converted into a salt of the protoxide with the separation of one half its copper in the metallic state, but by the action of hydrochloric acid is changed into a white subchloride or dichloride, Cu_2Cl, which is insoluble in water, though soluble in strong solutions of common salt and other chlorides. The black oxide, on the contrary, yields with hydrochloric acid a very soluble protochloride, CuCl, which is green in solution, but brown when deprived of water. —Certain salts of copper are of use in the arts, and may here be briefly noticed. Sulphate of

copper, or blue vitriol, is best prepared by dissolving the oxide in dilute sulphuric acid, or by oxidizing at a low red heat the native compounds of sulphur and copper, as is done in the roasting of copper ores, which after this process give to water a solution of sulphate. This salt crystallizes in large blue prismatic crystals, which have the composition $CuO, SO_3 + {}_5HO$, and contain almost exactly one fourth their weight of metallic copper. Besides its use in medicine, noticed hereafter, considerable quantities of sulphate of copper are consumed as an application to seed wheat to destroy the germs of the fungus known as smut. For this purpose the grain is soaked in a solution of the salt. It is also largely consumed in dyeing, and in the preparation of various pigments, among which are Scheele's green and Schweinfurt green, both very beautiful but poisonous colors, in which oxide of copper is combined with arsenic; Brunswick green, which is an oxychloride of copper; and verditer, a carbonate of copper. Verdigris is the name given to various acetates of copper. A pure crystallized acetate is prepared by dissolving oxide of copper in acetic acid; but the pigment known under that name is a mixture of several basic acetates or compounds of acetate and hydrous oxide of copper, prepared by parting sheets of copper in layers with the refuse of the grape from which the juice has been expressed, when a greenish layer of verdigris forms, and after some weeks is scraped off.—The sources of copper are the native metal and the oxidized and the sulphuretted ores. Mention will be made of the latter in treating of copper mines. The ores in which the metal occurs in an oxidized form are as follows: red oxide, or ruby copper, which is the suboxide already noticed, and occurs both massive and crystallized in isometric forms; in its pure state it consists of 88·8 parts of copper and 11·2 of oxygen. The black oxide is less abundant in nature, and generally occurs in an earthy uncrystalline form, but in 1846 a vein of massive and crystalline black oxide was found at Copper Harbor, Lake Superior, which yielded about 20 tons of the ore. The native carbonates of copper are two in number. The one is called azurite, and occurs in beautiful transparent blue crystals in certain copper mines, but is rarely abundant. The other, known as malachite, is sometimes crystallized, but more often occurs in concretionary masses of various shades of green, which are generally banded or arranged in such a manner that the mineral, which takes a fine polish, is much prized as an ornamental stone. Great quantities of it are found in the Siberian mines, and many beautiful objects are manufactured from it. Both of these carbonates contain water and an excess of oxide, constituting what are called basic carbonates. Malachite, from the large quantities in which it is sometimes found, is a valuable ore of copper. Chrysocolla is the name given to a green hydrated silicate of copper which sometimes accompanies the other oxidized ores of this metal, while atacamite is a green oxychloride of copper which occurs in considerable quantities in some South American mines. The white dichloride of copper has also been met with in a Chilian copper mine. All of these ores probably result from the oxidation of the native metal, or of the sulphuretted compounds of copper from which by far the greater part of the supplies of this metal are derived. Sulphur combines with copper in two proportions, corresponding to the two oxides already noticed. The protosulphide, CuS, is known as indigo copper, and is comparatively rare; but the disulphide, called also copper glance or vitreous copper ore, is more abundant, and constitutes a very rich ore. It is soft, leaden gray in color, and contains about 80 per cent. of copper. These ores are, however, less frequent than the double sulphides of copper and iron, one of which is known by the names of bornite, erubescite, variegated copper ore, purple, peacock, or horse-flesh ore, epithets suggested by the various shades of color which it presents upon its fresh or partially tarnished surfaces. Its composition varies slightly, the analyses of different varieties yielding from 56 to 63 per cent. of copper, 21 to 28 of sulphur, and 7 to 14 of iron. A less common ore is the so-called tetrahedrite, fahlerz, or gray copper, which is a complex sulphide, containing, besides copper, portions of arsenic or antimony, and more or less zinc and iron, often with silver or mercury. The most abundant ore of copper is the so-called yellow copper ore, pyritous copper, copper pyrites, or chalcopyrite, which is of a brass-yellow color, brittle, and, like the other sulphuretted copper ores, so soft as to be cut by a knife. It contains in its purest form 34·6 per cent. of copper, 34·9 of sulphur, and 30·5 of iron, but very generally occurs mechanically intermixed with more or less iron pyrites. Arsenides of copper are met with in nature, but have no importance as ores of the metal.—The uses of copper in the arts are very various, from its toughness, malleability, ductility, and resistance to oxidation; and moreover, from its great power of conducting both heat and electricity, it is adapted to very many useful purposes. Among these are the construction of boilers and vessels for distilling, and various chemical and culinary purposes; for submerged electric cables; for coinage; and for the engraver's art. In the construction of ships it is largely used for sheathing; and from the poisonous quality of the products of its slow oxidation in sea water it prevents the adhesion of barnacles and other shell fish, which would otherwise fix themselves upon the surface of the vessel and greatly impede its movements. Unlike iron, the results of its oxidation do not exert a corrosive and destroying action on wood, and for this reason copper replaces iron for the construction of the nails, bolts, and fastenings of ships. For many of these and other purposes, it is found

advantageous or economical to alloy copper with other metals. Thus, with zinc it forms brass; with tin, bronze and bell metal; and with zinc and nickel, German silver. An alloy of copper with from 5 to 10 per cent. of aluminum is known by the name of aluminum bronze, and from its golden yellow color, its great hardness and elasticity, and its resistance to oxidation, is susceptible of very many applications both useful and ornamental in the arts. It has lately been found that the union with copper of small portions of phosphorus imparts to this metal great hardness and great strength, so that it has been proposed to use the new phosphorus bronze, as it is called, for the manufacture of large guns. Small quantities of copper are alloyed with gold and with silver to harden these metals, both for the purposes of coinage and for various articles of manufacture.—A minute portion of copper has been found in the human body, and is considered a normal constituent. Sulphate of copper (but not copper itself) is used in medicine as an emetic in the dose of about two grains, acting rapidly and safely. In smaller doses it is an astringent. Externally it is applied to chronic granulating surfaces as an astringent and stimulant. In appropriate cases it is better than the nitrate of silver. When poisoning has taken place from this or other soluble salts of copper, the symptoms are chiefly those of gastro-intestinal irritation. Under these circumstances, milk and eggs should be administered, by which less soluble combinations of the metal are formed with the caseine and albumen they contain. The best antidote is ferrocyanide of potassium, which forms with the poison an insoluble ferrocyanide of copper. The existence of a form of chronic poisoning due to the gradual absorption of copper compounds, and analogous to lead poisoning, has not been satisfactorily established. — See Copper Mines, and Copper Smelting.

COPPERAS (Fr. *couperose*), a metallic salt, known also as green vitriol. It is a hydrous ferrous sulphate or protosulphate of iron, and is represented by the formula $Fe,SO_4,7HO$. It forms pale green transparent prismatic crystals, which are very soluble in water. When exposed to a gentle heat they lose their water of crystallization and are converted into a whitish pulverulent mass. Copperas slowly absorbs oxygen from the air, with the formation of a basic sulphate of peroxide of iron, of a rusty reddish yellow color; this change takes place more rapidly when it is dissolved in water. Copperas has a peculiar metallic styptic taste, which belongs to the other protosalts of iron. It is largely used in the arts for dyeing black, and in the manufacture of ordinary black writing ink. It is also employed in photography as a reducing agent, and in many other chemical processes. Pure copperas may be obtained by dissolving metallic iron in dilute sulphuric acid; hydrogen gas is evolved, and a green solution is obtained, from which crystals are got by concentration and cooling. In this way considerable quantities of copperas are manufactured from the refuse sulphuric acid which has been employed in the refining of petroleum. The chief supply of copperas is however obtained from the oxidation of the native sulphides of iron, some of which spontaneously absorb oxygen from moist air, and become covered with an efflorescence of copperas. In the case of other varieties of pyrites, which are less readily oxidable, they are first subjected to a partial calcination, by which a part of the combined sulphur is expelled, and then piled up in heaps, which are frequently moistened and lixiviated with water from time to time. The solutions thus obtained are concentrated by evaporation over a fire in lead or iron tanks, and then led into crystallizing vats, where the copperas separates on cooling in large masses of fine green crystals. The process of oxidizing a large quantity of pyrites is very slow, and requires many months or even years for its completion. Large quantities of copperas are manufactured by this method at Stratford in Vermont.

COPPERHEAD (*trigonocephalus contortrix*, Linn.; genus *agkistrodon*, Bd. and Gd.), a North American venomous serpent, the most dangerous after the rattlesnake. The head is thick and triangular; it has a pit between the eye and the nostril; the upper jaw furnished with poisonous fangs; the eyes large, and the orbital plates projecting; the iris is bright golden with a reddish tinge. The neck is contracted, and its scales are smooth; the body long, thick to near the tail, and covered above with rhomboidal carinated scales, except the lower rows, which are smoother; the last abdominal plate is very large; there are no rattles, the tail being short and conical, ending in a horny tip. The general color above is a light nut-brown, with transverse bars of dark brown, narrowest in the middle, broad and bifurcated on the sides; the under parts are flesh-colored, freckled with minute dark brown spots; near the flanks are rounded dark blotches, corresponding to the bifurcations of the dorsal bars. In a specimen 26 inches long, the head measured a little more than an inch in length by 11 lines in width; length of body 21 inches,



Copperhead.

and of tail 3½ inches; greatest circumference 3¾ inches; the abdominal plates were 150, and the subcaudal 42, with 4 pairs of bifid scales near the apex. It prefers dark and moist places, and feeds upon lizards, frogs, mice, and small birds. It is more dreaded than the rattlesnake, as it gives no warning of its proximity; it never attacks man except in its own defence; as with other venomous snakes, a very slight blow is sufficient to kill it. From its thick body and short tail, it is slow and clumsy in its motions, and it cannot ascend trees. It is also called "chunkhead" and "deaf adder." According to Dr. Holbrook, it is found from western New England to Florida, and from the Atlantic to the borders of the Alleghanies.

COPPERMINE RIVER, in British America, rises in Lake Providence, about lat. 65° N., lon. 112° W., flows a little W. of N. to just beyond the Arctic circle, when it bends abruptly W., after which its course is a little E. of N. to its mouth in the Duke of York's archipelago, an inlet of the Arctic ocean, at lat. 67° 40′ N., lon. 115° 37′ W. It flows through a very uneven region, and forms several lakes and many rapids and cataracts, but is navigable by canoes and boats. Its length is about 300 m. Fur-bearing animals, such as the bear, the fox, and the ermine, abound along its banks. The river derives its name from a copper mine discovered near its mouth. The region through which the Coppermine flows was first explored in 1821 by Sir John Franklin. Its mouth was the first point on the Arctic coast of America visited by Europeans.

COPPER MINES. Copper occurs in nature both in the metallic state, when it is known as native copper, and mineralized or combined with oxygen, sulphur, and various other foreign substances, constituting what are called the ores of copper. (See Copper.) This metal and its ores occur, like most other metals, both disseminated in beds of various kinds of rock, and in veins or lodes, which are deposits in fissures intersecting previously formed rocks. Copper and copper ores are found in rocks of very various geological ages. The crystalline schists of the eozoic age contain in many places both interstratified ore beds and lodes carrying the ores of this metal. This is true of the rocks of the great Appalachian system, which abound in deposits of copper ores in various localities, from Newfoundland through Quebec and Vermont into Virginia, the Carolinas, Tennessee, and Georgia. The copper ores of the Rocky mountains and those of Cuba and Chili are also in crystalline rocks; and the same is true of those of the Ural, of Norway, Sweden, Cornwall, and Devonshire. The great deposits of native copper found on the shores of Lake Superior, however, belong to a series of sandstones and conglomerates, interstratified with contemporaneous bedded trappean rocks, which rest upon the crystalline Huronian schists, and, being overlaid by the upper Cambrian rocks of the New York system, may be regarded as of the lower Cambrian age. Rich ores of copper occur in the palæozoic series in the so-called Shawangunk grit of Ulster co., New York. In Connecticut, New Jersey, and Pennsylvania, deposits of copper ores are found in sandstones of the mesozoic age, and somewhat similar deposits occur in various parts of Europe. The well known mines of Mansfeld in Germany, in which a sulphuretted ore is finely disseminated through black bituminous schists, are examples. There are important mines in Siberia and the Ural mountains. The product of Russia is estimated at 4,660 tons a year. The Swedish copper mine of Fahlun, in Dalecarlia, is supposed to have been worked for nearly 1,000 years. It was long extremely productive, yielding in the beginning of the 17th century nearly 4,000 tons annually, but it has since greatly declined. There are mines in other parts of Sweden, where in 1855 there were 15 smelting works, producing 1,990 metric tons (2,205 lbs.) of pig copper; in 1863, 16 works, producing 2,222½ tons; in 1868, 12, producing 2,410 tons. The product for 1869 was 2,600 tons; for 1870, 2,193 tons. The exports of crude copper in 1867 amounted to 1,928 tons; in 1868, 2,320; in 1869, 2,076; and in 1870, 1,957. From Norway there were imported into Great Britain, in 1867, 6,007 tons of ore, worth £34,209, and 193 of unwrought or partly wrought copper; in 1868, 6,871 tons of ore, worth £66,995, and 216 of copper; in 1869, 6,589 of ore, worth £154,508, and 105 of copper; in 1870, 1,911 of ore, worth £9,110, and 100 of copper; in 1871, 4,299 tons of ore, worth £26,520, and 97 of copper.—In the German empire copper is mined at Holzappel and elsewhere in Nassau; in the Eifel mountains, and at Eschweiler and Stolberg, near Aix-la-Chapelle; in Westphalia, and in the Hartz mountains, as well as at Mansfeld, in Prussian Saxony. In 1869, 217,415 metric tons of ore were obtained in the Zollverein, valued at about $1,300,000; in 1870, 207,381 tons, worth $1,250,000. The product of the smelting works in 1869 was 5,129 tons of copper, valued at over $2,000,000, and 4,730 tons of brass of about the same value; in 1870, 4,797 tons of copper, worth about $1,800,000, and 4,411 of brass, of about the same value. The value of sulphate of copper in 1869 was about $270,000, and in 1870 about $285,000. In 1869 the imports of copper and manufactures of the same amounted to 12,240 tons; the exports were 7,413 tons. In Prussia alone 156 copper mines were in operation in 1869, employing 6,691 miners, and producing 214,507 tons of ore, valued at about $1,275,000; 13 smelting works, employing 1,408 hands, and producing 4,448 tons of crude copper, worth about $1,750,000; 23 establishments, with 658 hands, producing 3,713 tons of copper manufactures, valued at $1,775,000; 77 establishments, with 1,381 hands, producing 4,722 tons of brass, worth about $2,025,000; and 2 manufactories

of sulphate of copper, employing 47 hands, and producing 945 tons, valued at $110,000. The most important mines of the Austrian empire are in Hungary, though the metal is also found in Bohemia. The product of ore, metal, and sulphate, with the value of each, from 1863 to 1867, is shown in the following table:

Years.	Ore, tons.	Value.	Copper, tons.	Value.	Sulphate, lbs.	Value.
1863..	58,037	$751,605	2,336	$1,326,861	409,173	$29,053
1864..	66,255	940,682	2,542	1,411,658	323,084	23,545
1865..	44,763	780,222	2,380	1,209,485	390,544	30,573
1866..	50,825	761,937	2,387	1,180,398	508,931	40,522
1867..	53,266	781,864	2,601	1,301,286	1,024,698	60,165

The product of copper for 1869 was 2,698 metric tons.—In Italy copper is found in the mountains bordering the gulf of Genoa, and in Sardinia, and there are mines in the mountains of Modena, and in central and southern Tuscany. In 1865 there were 34 mines in Italy, employing 2,412 hands, and producing 16,075 metric tons of ore, valued at $318,725; and 21 smelting works, with 287 hands, producing 1,032½ tons of copper, worth $552,915. The average production during the period 1867–'70 was 25,500 tons of ore and 550 tons of pig copper.—In France there are copper mines at Chessy and St. Bel near Lyons, but the product is not large. Considerable quantities of ore and crude metal, however, are imported, and smelted in that country. The product of the mines and smelting works for different periods has been as follows:

YEARS.	MINES.		SMELTING WORKS.	
	Copper, tons.	Value.	Copper, tons.	Value.
1855	99	$64,400	7,190	$4,359,400
1861	465	255,400	11,410	5,406,400
1867	755	339,429	20,016	9,301,454
1868	811	340,238	22,422	10,160,900

The imports into France from 1857 to 1868 are shown by the following table:

YEARS.	ORE.		CRUDE COPPER.	
	Tons.	Value.	Tons.	Value.
1857	4,861	$972,173	12,345	$8,024,568
1858	4,347	869,462	11,199	6,383,605
1859	6,582	1,316,439	12,770	6,640,545
1860	4,135	827,006	13,350	7,209,162
1861	5,827	1,165,400	13,959	6,700,489
1862	8,862	1,772,492	13,301	6,384,313
1863	8,976	1,795,292	16,175	7,440,736
1864	7,950	1,589,928	17,827	8,735,173
1865	6,392	1,278,461	15,610	7,492,963
1866	4,217	843,423	20,576	9,341,631
1867	3,806	721,192	18,900	7,370,956
1868	5,742	1,091,074	19,310	6,951,605

Of the 71,697 tons of ore imported into France during that period, 22,119 were from Peru and 7,870 from Algeria. The value of manufactured, alloyed, and old copper imported in 1868 was $1,348,014. The exports in 1867 were 3,454 metric tons of ore and 2,647 of crude copper; in 1868, 2,976 tons of ore, 3,812 of crude copper, and $1,380,861 worth of manufactured copper.—Spain is one of the chief copper-producing countries, and its mines have long been famous. The most important are those of Huelva, near the Rio Tinto, in Andalusia. The quantity of ore raised has been as follows: in 1864, 294,079 metric tons; in 1866, 347,257; in 1868, 284,184. The amount worked at the government mine of Tinto in 1864 was 64,756 tons, producing 1,046½ tons of copper; in 1866, 67,608 tons, producing 1,135 tons of copper; in 1868, 56,453 tons, producing 1,124 tons of copper. The average fineness was 1¾ per cent. At the same rate the total copper product of the kingdom for 1864 would be 5,146 tons; in 1866, 6,077 tons; in 1868, 4,973 tons. From Portugal were exported to Great Britain, in 1868, 1,774 tons of ore, worth $125,830; in 1869, 4,214 tons, worth $308,840; in 1870, 2,592 tons, worth $152,275; in 1871, 2,895 tons, worth $287,755.—In England, the mines of Cornwall and Devonshire were formerly the most productive known, but they have greatly declined. There are also some mines in Cumberland, Wales, and Ireland. In 1757 the mine called Huel Virgin, in Cornwall (now a part of the consolidated mines), produced in two weeks, at a cost of £100, copper ores which sold for £5,700; and in the next 23 days the product, obtained at about the same proportional cost, sold for £9,600. From 1744 to 1758 the average annual value of the copper product of Cornwall is stated at from £100,000 to £160,000. The production continued rapidly to increase, until in 1800 it amounted to 55,981 tons of ore, which produced 5,187 tons of metal, worth £550,925. In 1805, 78,452 tons of ore produced 6,234 tons of copper, worth £862,510; and though in subsequent years larger quantities of equally rich ore were produced, the same value was not reached till 1834, when 143,296 tons of ore produced 11,224 tons of copper, worth £887,502. The product of the mines of the United Kingdom since 1847 has been as follows:

YEARS.	Copper, tons.	Value.	YEARS.	Copper, tons.	Value.
1847...	14,139	£996,199	1860...	15,968	£1,706,261
1848...	13,608	795,582	1861...	15,381	1,572,480
1849...	12,670	836,552	1862...	14,843	1,493,241
1850...	13,314	954,949	1863...	14,247	1,409,608
1851...	12,914	866,080	1864...	13,302	1,350,699
1852...	12,868	1,076,883	1865...	11,888	1,134,664
1853...	13,137	1,281,410	1866...	11,153	1,019,168
1854...	13,113	1,322,903	1867...	10,233	831,761
1855...	13,854	1,400,657	1868...	9,817	761,602
1856...	13,275	1,283,639	1869...	8,291	644,065
1857...	17,375	2,154,500	1870...	7,175	551,309
1858...	14,456	1,562,693	1871...	6,280	471,000
1859...	15,770	1,734,700	1872...	6,000	450,000

The product for 1856 includes that of Cornwall and Devon only; that for 1872 is estimated. In addition to the above, considerable quantities of copper are obtained from pyrites mined in the kingdom. The amount for 1867 was 2,338 tons; 1868, 1,530; 1869, 1,519; 1870 and 1871,

about 1,500 tons each. The separate product of Wales in 1866 was about 650 tons; of Ireland, 1,335 tons. The number of mines in the United Kingdom in 1862 was 228; 1863, 222; 1864, 201; 1865, 203; 1866, 173. The average yield of the ore is 7 or 8 per cent. The following tables exhibit the British trade in copper from 1857 to 1871:

YEARS.	Imports.				Exports (foreign and colonial products).	
	Ore and regulus.	Value.	Copper, all kinds.	Value.	Copper, all kinds.	Value.
	Tons.		Tons.		Tons.	
1858	97,099	£2,138,880	7,366	£734,779	2,317	£234,149
1859	84,455	1,812,023	11,829	1,218,781	2,409	251,701
1860	97,317	2,011,558	12,649	1,221,302	3,682	355,706
1861	94,480	2,008,226	16,224½	1,448,899	3,923	356,705
1862	117,438	2,631,056	13,644	1,223,543	8,679	786,912
1863	102,099	2,000,473	12,698	1,140,861	6,289	574,380
1864	93,304	2,054,674	25,388	2,314,444	9,023	854,168
1865	122,248	£269,864	22,144	£1,978,576	9,347	£852,714
1866	129,547	2,440,754	21,409	1,687,567	14,092	1,133,284
1867	102,782	1,801,155	30,013	2,201,584	14,160	1,050,675
1868	114,036	2,069,873	35,535	2,550,712	20,851	1,498,425
1869	110,968	1,999,285	31,885	2,229,513	12,140	849,904
1870	106,632	2,015,128	29,964	2,019,544	14,519	972,158
1871	78,691	1,777,551	32,542	2,157,425	17,253	1,181,328

The relative amounts of ore and regulus imported have been as follows: 1868, 83,334 tons of ore and 30,702 of regulus; 1869, 72,199 and 38,769; 1870, 62,104 and 44,528; 1871, 48,215 and 30,476. Nearly all the regulus and the greater part of the unwrought copper are brought from Chili, while the ore is furnished by various copper-producing countries.

EXPORTS (DOMESTIC PRODUCE).

YEARS.	Unwrought copper, tons.	Value.	Mixed or yellow metal, tons.	Value.	Other sorts of wrought copper, tons.	Value.	Brass, tons.	Value.
1857	7,146	£852,055	6,327	£712,643	10,670	£1,415,398	1,098	£143,953
1858	6,719	699,622	5,945	573,147	12,124	1,426,771	1,332	155,511
1859	6,349	691,627	6,678	639,340	9,695	1,121,308	1,283	149,030
1860	6,980	749,879	6,651	625,983	12,485	1,411,854	1,833	211,692
1861	4,368	433,410	6,745	585,140	10,666	1,129,305	1,522	171,050
1862	5,088½	497,915	9,722	812,158	13,108	1,374,669	1,960	204,784
1863	12,797	1,188,713	11,680	953,457	13,610	1,849,425	2,395	241,895
1864	6,010	586,147	9,293	801,761	21,588	2,277,632	2,134	234,013
1865	5,569	496,148	9,950	816,640	16,089	1,617,422	2,212	232,309
1866	5,968	538,034	9,565	771,936	12,891	1,262,578	2,065	225,148
1867	9,680	779,849	13,092	971,203	14,973	1,286,327	2,309	215,772
1868	8,184	666,665	13,318	915,747	16,697	1,410,337	2,118	205,129
1869	12,116	969,766	11,680	785,340	18,772	1,575,425	2,724	255,058
1870	10,671	795,868	12,234	795,702	15,493	1,228,283	2,873	247,075
1871	13,958	1,055,082	12,975	870,962	12,377	1,022,549	3,511	318,998

The exports are to every quarter of the globe, but perhaps India is the most important market.—The most important copper mines in the United States are those on the south shore of Lake Superior, where the metal occurs in the bedded trappean rocks, with interstratified sandstones and conglomerates, which are developed to a greater or less extent in various localities along both sides of the lake, and are everywhere copper-bearing. The copper is almost wholly in the native or metallic state, and occurs in veins cutting the strata, associated with quartz and various spars and crystalline minerals; and also disseminated in the beds of rock, in which the richest and most productive mines of all are now wrought. While in some of the veins masses of pure copper weighing many tons are met with, the copper in the beds is generally in smaller masses or grains. In this state it occurs in the layers of soft amygdaloidal trap, locally known as ash beds; while in other cases the pure metal appears as the cementing material of conglomerates or breccias made up of the ruins of red feldspar porphyry rocks belonging to an older formation. Remarkable examples of this latter mode of occurrence are seen in the Boston and Albany mine and the Calumet and Hecla mine, the latter of which yielded in 1872 the enormous amount of 8,000 tons of fine copper, or about one tenth of the entire product of the globe. The working of these mines of Lake Superior commenced in 1845, and from that period up to 1858 the entire production of the whole region amounted to a little over 16,000 tons. The copper is extracted by crushing and washing the rock, and is then in a nearly pure state, requiring only to be melted down to ingot copper. There are evidences that mines were worked in this region ages since by a primitive people who had only stone tools for their work. A copper region of great importance occurs in adjacent parts of the states of Virginia, North Carolina, Tennessee, and Georgia, where sulphuretted ores are found in crystalline schists. For several years previous to 1861 the numerous mines in these regions were wrought in an imperfect manner; but the civil war, together with the great depression in the price of copper which followed up to 1871, has caused these mines to be for the most part abandoned, with the exception of those of Ducktown, Tennessee, which yield large quantities of ores that are smelted on the spot. With the

present augmented price of copper, and with the aid of improved processes for extraction of the metal from its ores, this region may become a second Cornwall. The deposits of copper ore in the mesozoic sandstones of Connecticut and New Jersey were formerly worked to a considerable extent. From those of Belleville, in the latter state, large quantities of ore were shipped to England as early as 1731. From the irregularity of these deposits, and from the fact that part of the metal is disseminated through the sandstones in an oxidized condition, and not easily extracted by the ordinary smelting processes, these mines have been abandoned. Very lately, however, rich deposits of valuable copper ore have been opened in these sandstones in Chester co., Pa. According to the census of 1870, there were in the United States 40 copper-mining establishments, with 93 steam engines of 6,318 horse power, 3 water wheels of 70 horse power, and 5,404 hands, of whom 2,157 were employed above ground, and 3,247 under ground; capital invested, $7,789,374; wages paid, $2,706,264; value of materials, $586,844; value of product, $5,201,312. The mines were distributed as follows:

STATES.	Number.	Steam engines.	Horse power.	Hands.	Capital.	Value of product.
Arizona	2	....	....	25	$2,500	$7,000
Maryland	2	2	85	72	157,000	71,500
Michigan	27	86	5,943	4,188	5,866,374	4,312,167
Nevada	1	....	....	20	3,000	30,000
North Carolina	1	1	80	105	80,000	96,000
Pennsylvania	2	....	....	7	30,500	7,800
Tennessee	2	*2	120	620	550,000	310,000
Vermont	2	1	50	355	1,000,000	358,845
Virginia	1	1	40	12	100,000	8,000

The more important of the Maryland mines is in Frederick co.; the other is in Carroll co. The Nevada mine is in Humboldt co., the North Carolina mine in Chatham co., the Tennessee mines in Polk co., and the Vermont mines in Orange co. Of the Michigan mines, 11 are in Houghton co., product $3,231,888; 6 in Keweenaw co., product $823,477; and 10 in Ontonagon co., product $256,802. The following table exhibits the product of the Lake Superior mines since 1858, in tons of 2,000 lbs.:

YEARS.	Copper.	YEARS.	Copper.	YEARS.	Copper.
1858	4,100	1863	6,500	1868	9,987½
1859	4,200	1864	6,500	1869	12,250
1860	6,000	1865	7,000	1870	12,950
1861	7,500	1866	7,000	1871	12,850
1862	6,300	1867	8,250	1872	12,125

The product of Vermont for 1872 was between 400 and 500 tons; of Tennessee, about 750; and of the United States, nearly 14,000. The imports of copper ore for the year ending June 30, 1872, amounted to 1,355½ tons (2,240 lbs.) valued at $85,622; of unmanufactured copper, 2,280 tons, worth $1,040,458; the manufactures of copper imported were valued at $800,478. Of the ore, 1,091 tons were from Chili, and 248½ from Canada; of the copper, 1,671 tons came from England, 290 from Cuba, 123 from the British West Indies, and 115 from Chili. The exports of domestic ore were 1,778 tons, worth $101,752; of domestic copper, 120 tons, worth $64,844; the value of domestic manufactures of copper exported was $121,139. The exports of foreign copper and ore were valued at $7,406. The imports of brass and brass manufactures were valued at $173,515; domestic exports, $229,458; foreign exports, $1,966. The production of Canada and Newfoundland may be seen from the imports of ore and regulus into Great Britain from those colonies. The imports from the Dominion of Canada in 1867 were 1,062 tons, worth $51,155; in 1868, 5,270 tons, worth $277,435; in 1869, 3,152 tons, worth $97,335; in 1870, 2,907 tons, worth $191,830; in 1871, 2,083 tons, worth $153,670. From Newfoundland were imported in 1867, 4,120 tons, worth $189,849; in 1868, 8,061 tons, worth $254,325; in 1869, 6,237 tons, worth $159,220; in 1870, 4,162 tons, worth $259,570; in 1871, 1,887 tons, worth $91,375.—There are important copper mines near Santiago in Cuba, from which about 25,000 tons of ore, averaging 16 per cent. of metal, were shipped to England in 1850. The shipments of ore and regulus in 1867 were 7,257 tons, worth $477,150; in 1868, 10,861 tons, worth $744,445; in 1869, 3,869 tons, worth $298,645. The working of the mines was interrupted by the insurrection, and in 1870 and 1871 the shipments amounted to only a few hundred tons.—Chili is the chief copper-producing country of the world. In 1853 the total copper product was 55,700 tons, of which Chili yielded 14,000 tons, or 25 per cent.; while at present that country produces about one half of all the copper mined on the globe. The exports of copper from Chili for a series of years have been:

YEARS.	Tons.	YEARS.	Tons.	YEARS.	Tons.
1862	43,109	1866	44,820	1870	49,139
1863	32,540	1867	44,654	1871	41,200
1864	47,500	1868	43,669	1872	40,000
1865	48,372	1869	54,867		

The value of the exports in 1870 was: bars, $8,067,178; regulus, $4,250,898; ore, $204,967; total, $12,523,043. The total product of the country is estimated as follows: in 1868, 46,500 tons; 1869, 55,000; 1870, 48,600; 1871, 44,900; 1872, 40,500. The mines at Corocoro, 15 leagues S. W. of La Paz, in Bolivia, yield abundantly, though without machinery for drainage or working. The native copper of the deposit, disseminated in sandstone, is extracted by crushing and washing. The product, known in commerce as barilla, was in 1869 from 3,000 to 3,500 tons of ore. Small quantities of copper are shipped from Peru to Great Britain.—The most productive mines of Australia are in South Australia, the largest being the Moonta and

* Also 3 water wheels of 70 horse power.

Wallaroo mines, on Yorke peninsula, which employ from 2,000 to 3,000 miners, and the Burra-Burra mine, employing about 1,000 hands. The exports from the colony of fine copper and ore from 1862 to 1871 were:

YEARS.	Fine copper, tons.	Ore, tons.	YEARS.	Fine copper, tons.	Ore, tons.
1862...	4,294	6,213	1867...	8,036	10,681
1863...	4,802	5,323	1868...	5,211	20,854
1864...	6,702	4,540	1869...	4,639	26,814
1865...	5,010	16,180	1870...	5,471	20,886
1866...	6,270	16,870	1871...	6,395	20,127

The value of the copper exports in 1871 was £648,569. In New South Wales in 1872 there were 18 copper mines, with a nominal capital of £831,000, and a subscribed capital of £460,240. The product of 1871 was 667 tons of copper, valued at £44,123; exports, 1,350 tons of raw copper, worth £87,575, and 1,370 tons of ore, worth £14,264. The imports into Great Britain from Victoria from 1867 to 1871 were:

	1867.	1868.	1869.	1870.	1871.
Ore and regulus, tons....	5,477	8,488	6,666	8,125	3,522
Value.....	£59,193	£84,630	£64,545	£91,813	£37,698
Unwrought and partly wrought copper, tons....	763	281	1,085	445	1,202
Value.....	£258,685	£20,160	£73,066	£27,700	£92,668

Small quantities of copper are also produced in West Australia.—There are copper mines in the Taurus, in Persia, India, Cochin China, and Japan. From the last named country considerable quantities are shipped to China and elsewhere in the East, the exports in 1870 from Hiogo and Osaka amounting to 1,290 tons, worth $426,375. Copper is likewise found in Morocco, in South Africa, and on the W. coast of that continent. The imports of ore and regulus into Great Britain from the Cape of Good Hope in 1867 were 5,935 tons, worth £108,534; in 1868, 2,843 tons, worth £62,407; in 1869, 4,628 tons, worth £92,155; in 1870, 6,926 tons, worth £118,155; in 1871, 6,414 tons, worth £143,812.—The total production of the world at different periods has been estimated as follows: in 1830, 25,500 tons; in 1840, 41,000 tons; in 1850, 54,700 tons. Simonin, in his "Underground Life," calculates the yield in 1865 to have been 65,000 tons, worth $500 a ton.

COPPERPLATE. See ENGRAVING.

COPPER SMELTING. With the exception of the native copper from Lake Superior, and smaller quantities from Peru and Bolivia, nearly all the copper of the world is obtained from sulphuretted or oxidized ores, which require for the separation of the pure metal a long and somewhat costly process. This is effected either in the dry or the wet way; that is to say, by operations in the furnace, or by processes which allow the copper to be separated in a dissolved form in watery solution, and subsequently precipitated therefrom. The term smelting applies more properly to the first process, but we shall briefly describe both the dry and wet methods.—The treatment of the native oxides and carbonates is extremely simple, requiring only their fusion with charcoal and a proper flux in a small blast furnace, by which metallic copper is at once obtained. In the case of the sulphuretted ores, which generally contain more or less iron and other foreign metals, the treatment is much more complicated, and depends upon the fact that the copper has a greater affinity for sulphur than the associated metals; so that if a double sulphuret of copper and iron be partially oxidized by roasting in the open air, and then melted in a furnace, the iron in an oxidized condition unites with the foreign matters to form a more or less fusible cinder or slag, while the copper, still retaining its sulphur, separates in the shape of a dense brittle mass known as regulus or matt. To facilitate this process, various ores are often mixed together in order to secure greater fusibility, and oxidized ores are sometimes mixed with highly sulphuretted ones, by which means the copper of both is got in the form of regulus. In some districts low-grade ores, of perhaps 4 or 5 per cent., are thus converted into a regulus of 30 per cent. or more, which is then shipped to some other place for further treatment. This regulus holds also any gold or silver which may have been in the ore, and hence the copper ores of Colorado, rich in precious metals, are there converted into regulus, which is sent elsewhere for further treatment. The regulus or concentrated copper ore thus obtained, still containing a portion of iron and sulphur, is again roasted and fused with some flux, whereby a richer regulus is obtained; and this operation is repeated until a nearly pure disulphide of copper results. For the extraction of the copper from this two plans are adopted. The first, still followed in Wales and in most European works, consists in partially roasting the refined regulus, by which a part of the sulphur is removed as sulphurous acid, and the combined copper is converted into oxide; and then causing the latter to react upon the yet unoxidized portion, the sulphur of which fixes upon the oxygen of the oxide to form sulphurous acid, while the copper of both is left in the metallic state. The reaction may be thus represented: $Cu_2S+2Cu_2O=Cu_6+SO_2$. The second plan consists in continuing the roasting and oxidation of the purified and pulverized regulus until the whole of the sulphur is expelled. The copper, being then in the condition of oxide or suboxide, is treated directly with charcoal in the same way as the native oxides and carbonates. The latter method, known from its inventor as Napier's, is now generally pursued in Chili, and is said to offer great advantages on the score of economy of fuel and labor over the older system. The copper ob-

tained by either of these processes is still somewhat impure, from the presence of small quantities of sulphur and foreign metals, chiefly arsenic, tin, iron, and sometimes nickel. To remove these it is fused in contact with the air, by which these are oxidized and the fixed oxides combine with the silicious matters of the hearth. In this process, however, the copper absorbs a portion of oxygen and holds in solution a quantity of suboxide, which impairs its malleability. This is removed by covering the surface of the melted metal with anthracite or charcoal, and stirring it with wooden poles, which by giving off reducing gases deoxidize the metal and give it the toughness of pure copper, after which it is cast into ingots. The details of these processes vary considerably with different ores and in different localities. The consumption of fuel in the treatment of copper ores is very great. Thus in the old Welsh process it is said that as much as 15 tons of coal is used in extracting one ton of copper from the low-grade ores of Cornwall. In Chili, however, owing to the great improvements introduced there, a ton of ingot copper is now made from ores of 13 per cent. with the aid of five tons of coal.—The extraction of copper from its ores by solution has been long known. The spontaneous oxidation of the sulphuretted ores in certain mines gives rise to solutions of sulphate of copper, which when brought in contact with metallic iron yield their copper in a metallic state, while the iron is dissolved. The copper thus obtained is in a granular, more or less crystalline form, and is known as cement copper. By the artificial oxidation, by roasting in furnaces or in heaps with burning wood, of sulphuretted ores, a large proportion of the metal is converted into sulphate, and may then be dissolved out by water. From the solutions thus obtained the copper is either thrown down by iron in the metallic state, or in some cases by lime as an oxide, or by sulphuretted hydrogen gas as a sulphide, to be subjected to further treatment. Other methods of rendering the copper soluble have been devised. Thus, in some cases, the naturally or artificially oxidized ores are directly treated with sulphuric or hydrochloric acid, by which the copper is dissolved as sulphate or chloride, and then precipitated by metallic iron. Another plan consists in calcining the ores with a portion of common salt, by which, with the aid of the oxidized sulphur, sulphate of soda and chloride of copper are formed. This is known as Longmaid's process, and has been extensively applied by Henderson in England to the treatment of the pyritous ores from Spain, of which several hundred thousand tons are annually imported into England and calcined in proper kilns for the extraction of the large amount of sulphur which they contain, which is used for the manufacture of sulphuric acid. The residues, still containing a little sulphur and from one to four per cent. of copper, are calcined with salt as above described, and give up to water, with the help of a little hydrochloric acid, the whole of their copper. The consumption of iron by these processes is considerable, amounting to from one and a quarter to two tons for each ton of copper produced. When the copper is present as sulphate, the resulting sulphate of iron is a valuable by-product. The protochloride of iron obtained when the copper is precipitated from its chloride has been converted by exposure to air or by chlorine gas into perchloride, and used to dissolve oxide of copper from oxidized ores. The occurrence of large quantities of low-grade copper ores in localities remote from cheap supplies of fuel has caused increased attention to be given to wet processes for the extraction of copper from its ores, and two newly devised methods have been brought forward and patented. The one, known as Monnier's, differs from that of Longmaid in substituting sulphate of soda for chloride of sodium in the calcining furnace. By this means it is possible to convert the whole of the copper in a sulphuretted ore into sulphate, which is then decomposed by metallic iron, or, as has been lately proposed, is partially separated by a process of concentration from the sulphate of soda, and then decomposed by calcination with charcoal. The other, known as the Hunt and Douglas process, is based on a new principle, and applied either to native oxides and carbonates or to the artificially prepared oxides resulting from the roasting of sulphuretted ores. Protoxide of copper reacts with protochloride of iron to form peroxide of iron and a mixture of protochloride and dichloride of copper: $3CuO + 2FeCl = Fe_2O_3 + Cu_2Cl + CuCl$. The dichloride is insoluble in water, but readily soluble in hot and concentrated brine; and from the solution holding the two chlorides of copper, the metal is readily thrown down by metallic iron, regenerating the protochloride of iron, with a consumption of about two thirds of a ton of iron for a ton of metallic copper. In practice the ores (oxidized if necessary by roasting) are digested with a hot brine mixed with protochloride of iron; and the resulting solution, being brought in contact with metallic iron, gives up its copper, and is then ready for the treatment of a fresh portion of ore. The cement copper thus obtained is very pure, and is readily melted down into ingot copper. The small quantities of silver very often present in copper ores are dissolved in the form of chlorides in the Hunt and Douglas and Longmaid processes, and may be economically separated therefrom by the ingenious process of Claudet, which consists in precipitating the silver in combination with iodine.—Swansea in Wales, which is in a coal district, has been for a long time one of the great copper-smelting centres, and receives the ores and regulus not only of Cornwall, but from many other parts of the globe. In former years much of the copper ore from Chili was carried to England for smelting, but

it is now in great part smelted at home, although in 1870 two thirds of the copper produce of that country was sent to Swansea in the shape of regulus. Large quantities of ores from Australia, South Africa, Cuba, and British North America are shipped to England for treatment. The smelting works of Great Britain are the most extensive on the globe. In 1871 there were 24 copper mills, employing 3,525 hands; of which 13 were in Glamorganshire, 3 in Carmarthenshire, 3 in Surrey, 2 in Staffordshire, 2 in Worcestershire, and 1 in Anglesey. According to the census of 1870, the United States contained 27 establishments for milling and smelting copper, with 43 steam engines of 3,244 horse power, 1 water wheel of 39 horse power, and 1,082 hands; capital, $3,158,500; wages paid, $577,129; value of materials, $10,715,400; value of product, $11,684,123. They were thus distributed:

STATES.	Establishments.	Hands.	Capital.	Value of products.
Maryland	1	127	$800,000	$1,016,590
Massachusetts	1	97	500,000	544,850
Michigan	19	636	1,591,000	9,260,976
Rhode Island	1	25	65,000	335,920
Tennessee	2*	188	130,000	510,677

The other 3 (1 in Arizona and 2 in California) were unimportant. The Maryland works are in Baltimore co., the Massachusetts works in Bristol co., the Rhode Island works in Newport co., and the Tennessee works in Polk co. Of the Michigan works 12, employing 511 hands, and producing $6,752,228, were in Houghton co.; 1, with 62 hands, producing $2,003,760, was in Wayne co.; and 6 (quartz mills), with 63 hands, producing $504,988, were in Keweenaw county.

COPPET, a village of the canton of Vaud, Switzerland, on the lake and 9 m. N. of the city of Geneva; pop. 500. In the château of Coppet the philosopher Bayle was at one time a teacher in the family of Count Dohna. The château was afterward the residence of M. Necker and of his daughter Mme. de Staël; and it is at present a summer residence of Baron Rothschild.

COPROLITES (Gr. *κόπρος*, dung, and *λίθος*, a stone), the fossil excrements of various kinds of fishes and saurians, first recognized as such by Buckland. They are found, sometimes in enormous quantities, in several geological formations, as the tertiary, chalk, oölite, lias, and carboniferous, scattered among the other fossils in these rocks, and sometimes met with enclosed among the ribs of the fossilized ichthyosauri. They occur to some extent in this country in the greensand and coal formations, but in England most abundantly in the lias. They vary greatly in size, some being the product of the largest ichthyosauri, and containing within them scales and bones of fishes and other animals which served as food to these monsters; while some belonged to smaller individuals, and are now seen in stony lumps of only an inch or two in length. Their color is whitish, grayish, and from this to black. On their surface are still impressed the marks of the tortuous wrinkles of the intestines. The animal remains preserved in the coprolites indicate the prey of these fishes and saurians. The larger kinds appear to have fed upon the smaller of their own species; and these, from the bones found in the coprolites of the largest ichthyosauri, could not have been less than 7 ft. in length. A remarkable instance is given by Dr. Buckland of the minute accuracy with which the principles of comparative anatomy are applied to investigations of this nature. A small scale of a fish seen upon one side of a coprolite was shown to Prof. Agassiz, who at once recognized it as belonging to the extinct species *pholidophorus limbatus;* and from a minute tube upon its inner surface, hardly discernible without a microscope, he observed that it must have been on the left side of the body near the head. This tube passed through the scales from the head to the tail of the fish, conveying a lubricating mucus.—Different coprolites differ considerably in chemical composition; those containing much phosphate of lime are very valuable as fertilizers, and are used as such. In the following table the first and fourth columns of figures give the composition of the coprolites of the coast of Suffolk; the second column, those found in the ironstone of Burdiehouse in Scotland; the third, those found in the limestone of Burdiehouse, according to A. Connel; the fifth, those over the lias near Stuttgart, Germany; the sixth, those from Bohemia:

CONSTITUENTS.	1.	2.	3.	4.	5.	6.
Phosphate of lime	56	10	85	16	68	15
Phosphate of iron	14	6	....	14	6	....
Carbonate of lime	21	61	11	40	17	5
Alumina	4	....	....	7	....	....
Silex	2	....	....	10	6	....
Carbonaceous matter	1	4	4	10	1	74
Moisture	2	5	....	2	2	1
Carbonate of magnesia	....	14	.. .	1	....	3
Chloride of sodium	....	....	....	....	...	2

The varying chemical composition of this mineral is to be expected from its origin; the form and color also differ greatly, but the specific gravity is always between 2·6 and 2·8.

COPTIC LANGUAGE (Sahidic, *Mentkyptaion* or *Aspi en Kēmi*, language of Egypt; Ethiopian, *Gbetze;* Arabic, *Keft*, in which also the Coptic people are called *Ghipt*). Some writers, following the Moslems, derive the name Coptic from *κόπτειν*, to cut, to circumcise; Wilkins and Pococke from Koptos, a Thebaic nome on the Nile; others from the Jacobites, a body of heretics who were called Coptes, under Heraclius (A. D. 610–641); this is the prevailing theory of Roman Catholic authorities. Others hold that Copt was the name of the son of

* Quartz mills.

Misraim, the founder of Egypt, and that it has descended from him to all the native race; this is the legend of the convents, and the boast of the Coptic people. But since Renaudot, the most eminent Egyptologists have agreed in deriving it from Αἴγυπτος (according to Brugsch, in ancient Egyptian, *Ha-ka-ptah*, house of the worship of Ptah), whose sacred language was the mother of the Coptic, by which alone we are now enabled to understand the Egyptian monuments. This ancient sacred language coexisted with a vernacular dialect, and out of the two, with a mixture of Greek and Arabic words, arose the Coptic, which may be dated from the time of the Ptolemies in Lower Egypt; the version of the Gospels in it having been read by St. Anthony, who did not know Greek, about the year 271. The language was used in Lower Egypt until the 10th century, and in Upper Egypt until the middle of the 17th, when it altogether gave way to the Arabic, except in the monasteries, where it was still preserved. With Christianity the Copts adopted not only the Greek religious nomenclature, but the Greek alphabet as well, even introducing the forms of such letters as *g*, *d*, *z*, *x*, and *ps*, though these sounds do not occur in genuine Coptic. Thus in the Coptic alphabet there are 32 signs, including these intrusive Greek letters; a numeral sign for 6 inserted after *e;* six Egyptian letters derived from hieroglyphs (and representing two forms of *sh*, *kh*, *h*, *f*, and the English *j*); and a syllabic sign for *ti*. Strictly speaking, however, there are 21 Coptic sounds, viz.: *a*, *e*, *i*, *o*, *u* (which was written *oy*), all pronounced as in Italian, with *y* sounded as a French *u;* *b*, *k*, *l*, *m*, *n*, *p*, *r*, *s*, *t*, *f* (also written *ph*), *h*, the German *ch*, the English *sh* and *th*, and the English *j*. Diacritic signs were used; thus a horizontal line over numerals, over contracted words, and over $\overline{m}$ and $\overline{n}$, which are then to be read *em* and *en*, &c. The language has three dialects, viz.: the Memphitic, or genuine Coptic, which abounds in aspirates, writes *ai* for *ei*, and loves the final *i;* the Sahidic or Theban, which uses the final *e*, and writes *ei* instead of *ai*, and in which the *Pistis Sophia*, a Gnostic work, is written; and the Bashmuric, belonging to the two oases, the poorest of the three in literature, using *a*, *e*, *ē*, and *l* respectively, instead of *o*, *a*, *ĕ*, and *r*. —All simple words are monosyllabic, unless lengthened by additional vowels; *e. g.: ape*, head; *ohi*, to stand; *mash*, to strike; *pēt*, to run; *ro*, mouth, &c. Verbs become passive by a change of their vowel into *ē: kō*, to put; *kē*, to be put. There are doubled roots, as *shorsher*, to destroy (*shor*, to throw away); words inserting a vowel, prefixing *a*, *en*, *sh*, or suffixing *r*, *s*, *f*, *sh;* compounds of two words, as *sek-mōu*, to draw water, *rem-ne-kahi* (man-of-land), inhabitant, *tsa-bo* (*ti*, give, *sbo*, learning), to teach, *ham-she* (man-wood), carpenter, &c.; and compounds with the following prefixes: *at-nay*, invisible, *la-foi*, very hairy, *ment-*(or *met*)*-at-nute* (-ism a-the-), atheism, *ref-sōnt* (-or creat-), creator, *shu-taio*, worthy (of) honor, *shin-nay*, to see; hence nouns by *pi-*, *er-*, as *pi-shin-nay* (-ing see-), vision, *an-* (much, again) *-thba*, myriad, &c. Nouns are formed by prefixing *at*, *ma*, *met;* thus: *ma-nesō* (place-drink), inn; *met-athmu* (-ity immortal-), immortality. Many hieroglyphs are thus compounded: MT-S (Copt. *met-sei*), ornament; MT-KT (*met-kōto*), circuit; MT-STN (*met-suten*), kingdom. The MT expresses our -ment, -dom, -ity, -ism, &c.—There are but two genders. The feminine is often formed from masculine by a vowel change, or by suffixing *e* (*i*, Memphitic), or by an article or adjective; thus: *urō*, queen (from *uro*, king); *hinb-i*, ewe-lamb; *alu-shime*, female child; *alu-hout*, male child. The articles are indefinite, definite, and demonstrative. The former are of common gender; as, *u rōmi*, a man; *han-mui*, some lions. The definite articles are *pe* (*pi*, M.), corresponding to French *le; te* (*ti*), to Fr. *la;* and *ne*, *nei* (*ni*), to Fr. *les;* thus: *pi-son*, *le frère; ti-sōne*, *la sœur; ne-tay*, *les montagnes*. They often drop the final vowel, as *pnute*, *le dieu*. Before initial *h* the corresponding aspirates occur, as in Greek; thus, *th-orasis*, ἡ ὅρασις. In hieroglyphs the prefix P stands for *le*, and N for *les*, but the suffix T for *la;* thus MU-T (Copt. *ti-mau*), *mère la*. The demonstrative articles, either joined or not, are *pei*, Lat. *hic; tei*, Lat. *hæc;* and *nei*, Lat. *hi*, *hæ*, *hæc*. In hieroglyphs and Memphitic, they are PAI, TAI, NAI. Possessive adjectives are formed of the definite article and of the suffixes *a* (to have), and *e* (to be, *être à*, to belong to); thus: *pa*, Fr. *le mien; ta*, Fr. *la mienne; na*, *les miens* and *miennes;* analogous are *pek*, *tek*, *nek*, Lat. *tuus*, *tua*, *tui*, masculine; *pu*, *tu*, *nu*, the same for feminine; *pef*, *tef*, *nef*, his, her, their, masc.; *pes*, *tes*, *nes*, fem.; *pen*, *ten*, *nen*, Lat. *noster*, &c.; *peten*, &c., Lat. *vester*, &c.; *pey* (*pu*), &c., their; *e. g.: pa-nuti*, my God; *pen-hēt*, our heart; *tek-shom*, thy power. The hieroglyph RN-F is for the Copt. *pef-ran*, his name. Foreign and many Coptic nouns are without a plural form; thus: *ni-apostolos*, the apostles; *han-magos*, some magi; Copt. *pei-hou*, the day; *nei-hou*, these days. Many Coptic nouns become plural by suffixing *i* (*e*, Sah.) to consonants, or by lengthening final vowels; as *apey*, heads; *urō-u*, kings; *sbō-ui*, doctrines. Hieroglyphs trebled the noun, or added three lines, or final diphthongs; thus: KM-UI, Egyptians; MR-UI, regions. Some are anomalous; thus: *eiot*, father, *eiōte*, fathers; *hurit*, guardian, *hurate*, guardians; *son*, brother, *sney*, brothers. Others are more dissimilar, as *shime*, woman, *hiōme*, women; *bōk*, servant, *ebiaik*, servants; *iom*, sea, *amaiōu*, seas. The cases of declension are signified both by separate particles and by prefixes. The nominative sign is *enshi* (S. and B.), or *enje;* the genitive, *ente*, *en-*, *em-;* the dative and accusative, *en-*, *em-*, *è-*, *ō-;* vocative, *pe;* the ablative, *ebol*, *hiten*, *en-*, *em-*, *e-*, and many prepositions.

The hieroglyphic genitive is N, NT, M; dat., N, R, L, HR (Copt. *haro*, to); acc., N; abl., M, out from, EM, by, for, MT (Copt. *mut*, to join). Adjectives become names of origin or of quality by means of *en;* thus: *rem-en-Kēmi* (man of Egypt), Egyptian; *rem-en-nuti* (man of God), pious. To form the feminine adjectives, add *i* (*e*) to the masculines, or lengthen the final vowel. The plural of adjectives is formed like that of substantives. Some adjectives receive personal suffixes, as *ter-k*, whole-thou; *naa-s*, great-she. The comparative degree is denoted by *huo*, corresponding to the Gr. *μάλλον*; the superlative by *khen*, in, *ute*, between, *ebol-ute*, before, *emate* (*emastrō*), very, much, and by the Gr. *-ιτος*. In ancient Egyptian, the genitive plural (as king of kings), and *enhme*, *estrate*, and *èhote*, indicated plurality. The numerals are: 1, *ua*, masc., *uei*, fem. (*uai*, *ui*, M.); 2, *snay*, *sente* (*snuti*); 3, *shoment*, *shomte;* 4, *ftou*, *fto;* 5, *tiu*, *tie;* 6, *sou*, *so;* 7, *sashsf;* 8, *shmune;* 9, *psit;* 10, *mēt;* 20, *juōt;* 30, *maa'k;* 40, *hme;* 50, *taiu;* 60, *se;* 70, *shbe;* 80, *hmene;* 90, *pēstaiu;* 100, *she;* 1,000, *sho*, &c. Ordinals: 1st, *ti-aphe* (beginning), *shorp*, &c.; the others are formed by prefixing *mah* (MH) to the cardinals. Distributives are made by doubling the cardinals; multiples by adding *sop* (times); fractions by prefixing *re* (R) with *fre*, part. The personal pronouns are: *anok*, I; *entok*, *ento* (masc. and fem.), thou; *entof*, he; *entos*, she; *anen*, we; *entoten*, you; *entōu*, they. Possessive demonstrative pronouns consist of the article with *ō* (to be) and personal suffixes; thus: *pōi* (the-is-me), my; *pōk*, *pō* (masc. and fem.), they; *pōf*, *pōs*, his, her; *pōn*, our; *pōter*, your; *pōu*, their. The demonstratives *pē*, *tē*, *nē* correspond to the Lat. *ille*, *illa*, *illi*. The relative *et*, who, which, what, is indeclinable. The interrogatives *nim*, *eut*, correspond to Lat. *qualis;* *uer*, to Lat. *quantus*, *quot;* and *u*, to Lat. *quid*. Verbs indicate persons either by suffixes, as *i*, I; *k*, *e* (masc. and fem.), thou; *f*, *s*, he, she; *n*, we; *ten*, you; *sen*, they; or by the prefixes *ti*, *k*, *te*, *f*, *s*, *ten*, *teten*, *se*. Particles of tenses are, for the present, *ei*, Lat. *sum;* *ek*, *ere* (masc. and fem.), Lat. *es;* *ef*, *es*, Lat. *est;* *en*, *sumus;* *ereten*, *estis;* *ey*, *u*, *ere*, *sunt*. The perfect indefinite is *ai* (have-I), Lat. *fui;* *ak*, *fuisti*, &c. The imperfect, *ne* (*venit*), like the Fr. *venir de*, is inflected thus: *nai*, *nak*, *nere*, *nef*, *nes*, &c. *Pe* following denotes simultaneity, as *nai-ke-kahey pe*, I was at the same time naked. The future is indicated by *e-*, *-ē*, *eiè*, *ekè*, &c.; the second future (soon) by *na*, to go, or *ei*, toward, as *ekna*, thou wilt be soon; and the pluperfect by *naina*, Fr. *j'allais*. *Sha* denotes habit; thus: *shai*, *soleo;* *shak*, *soles*, &c. The subjunctive is distinguished by *en-*, that, as *entirashi*, Lat. *gaudeam;* the optative by *marei* (*velle*), I wish, by *ma*, grant, or by *pe*, to be, as *marekōnh*, *utinam*, *vivas;* the imperative is the root alone, or with the prefix *a*, be it, or *ma*, give, as *ajas*, say; the infinitive is the root and used as a substantive; the present participle has the prefix *e* or *et*, who, as *pilaos ethemsi*, the people sitting. Particles are joined to tenses; thus: *entcrei-tōm*, when I close; *shantei-enjoos*, as long as you say. Other particles are *ēnei*, if, *shan*, if so that, and *empati*, before that. Negation is indicated by prefixing *en*, *empe*, *empate*, or by affixing *an*, or by inserting the verb between *en* and *an*. Endings of the sacred dialect are -I, I; -K, -T (masc. and fem.), thou; -F, he; -S, she; -N, we; -TN, you; and -SN, they. Its auxiliary verbs are E-, A-, O-, UON-, to be, and ER-, to do, to make. The prepositions are: *è*, in, of, from; *èbol*, *ebolhiten*, out, through; *èhote*, before, above, on; *nem*, with; *enten*, of; *sha*, till, to; *kha*, under, against; *ha*, under, to; *haten*, near by, with; *hi*, in, on, &c.; which are lengthened by such suffixes as *rat*, *tot*, *rō*, *ma*, *fēt*, *ō*, &c. Adverbs are made by prefixing *è* to nouns; thus: *èphlēu*, in vain, *èpehou* (on the day), daily; or by prepositions, as *khen u rashi* (in a joy), gladly. The most frequent conjunction is *jè* (saying), that, because, whereas. Others are *shantei*, while; *enei*, *eishan*, if; *empati*, before that; and many Greek ones with their own signification, as *de*, *te*, *alla*, *an*, *eti*, *ana*, *kata*, *hina*, &c. The hieroglyphic prepositions are N, Copt. *en;* NT, *ente;* HR, *haro*, to; HT, *hahte*, near; RM, *erem*, with, near, by. The construction is strictly logical, the subject being followed by the verb and this by the regimen. Specimen: *Pen iōt*, *et khen* (*noster pater qui in*) *ni* (article) *phēuì* (*cœlis*): *Maref-tubo* (*utinam sanctum*) *enje* (article) *pek ran* (*tuum nomen*). *Maresì* (*veniat*) *enje pek meturo* (*tuum regnum*), &c.—Translations of portions of the Coptic Scriptures, of Gnostic odes, and inscriptions have been made by Huntington, Pococke, David Wilkins, Tuki, Giorgi, C. G. Woide, F. Münter, Mingarelli, Zoëga, Quatremère, Engelbrecht, H. Tattam, L. Ideler, G. Seyffarth, Schwartze, P. Bötticher, Champollion-Figeac, Mariette, Brugsch, and others. Peiresc was the first European student of Coptic. Saumaise and Scaliger made little progress in it. Athanasius Kircher (1636–'44) devoted some attention to it, but fell into many errors. Waldoni (1653), E. Vinding (1660), Bonjour (1699), Blumberg (1716), Tuki (1778), Scholtz (1778), and Didymus Taurinensis or Valperga (1783) wrote on the grammar and lexicography. The *Opuscula* of Jablonski contain an excellent glossary. Important contributions are furnished by the *Recherches critiques et historiques sur la langue et la littérature de l'Égypte*, by Quatremère (Paris, 1808); the "Grammar of the Egyptian Language," by Tattam (London, 1830), with an appended dictionary by Young; and the grammar and dictionary of Champollion the younger. Rosellini's treatise on the Coptic language (Rome, 1837) was to a large extent copied from Champollion. An excellent survey of the history of the study of Coptic is given by Félix Nève, *Des travaux de l'érudition chrétienne sur les monuments de la langue copte* (Louvain, 1860). Among the latest and

best grammars are those of Peyron (Turin, 1841); of Benfey (Leipsic, 1844), showing the relation of the Coptic to the Semitic languages; of Schwartze, edited after his death by Steinthal (Berlin, 1850); of Uhlmann (Leipsic, 1853); of Seyffarth (Gotha, 1855); and of Schrader (Göttingen, 1860). The best vocabularies are those of Vessière de la Croze (edited by Woide, Oxford, 1775), Rossi (Rome, 1808), Tattam (Oxford, 1835), Peyron (1835), Parthey (Berlin, 1844), and Brugsch (Leipsic, 1867–'8). For a reading book there is the *Pistis Sophia*, published by Petermann (Lat. version by Schwartze, Berlin, 1851), and the *Liber Henoch æthiopice*, edited by A. Dillmann (Leipsic, 1861). Valuable contributions appear from time to time in the monthly periodical edited by Lepsius and Brugsch, *Zeitschrift für ägyptische Sprache und Alterthumskunde*, which has been published at Leipsic since 1864.

COPTIS, gold thread, a genus of the natural order *ranunculaceæ*, which inhabits the northern regions of this continent and of Asia, and is found in Greenland and Iceland. *C. trifolia*, the only native species, is a pretty little evergreen, growing in moist woods, which derives its English name from the bright yellow color of its slender roots. The yellow color, as well as the bitterness which pervades the whole plant, and especially the root, is due to the presence of the alkaloid berberina. Its virtues are simply those of a mild bitter tonic. In New England it is employed as a local application in ulcerations of the mouth.

COPTS, the principal sect of Christians in the valley of the Nile. Ethnologically, the Copts are the representatives of the native race which inhabited Egypt in the time of the Ptolemies. The race, however, has been mingled somewhat with the blacker tribes of the upper Nile, and with its Greek and Arab conquerors. In physical characteristics the Copts resemble much the Moslems in Egypt, but they are smaller in stature and have a less independent bearing and manner. As a general rule their complexion is dark brown, almost approaching to black. The nose is straight, widened at the end; the eyes, which incline upward, are black, the forehead is narrow, and the hair curly. Their dress is of dark colors, both in the turban and flowing robe, either of brown, dark blue, or black. In the towns and cities this is an invariable distinctive mark, but in the villages of Upper Egypt the attention to costume is less scrupulous, and the Copt women cannot by dress be distinguished from the Moslem. The cross, tattooed upon the hand of the Copt woman, is a more decisive badge; and for the man an inkhorn at the girdle is another badge, since the work of scribes and clerks in Egypt is almost wholly in the hands of Copts. Their education is usually much superior to that of the Moslems, and they are more apt in those pursuits which require quickness of sight and readiness of invention. Unlike the Moslems, also, they drink freely of spirituous liquors. In the matter of food their customs are in many respects identical with those of the Jews. They will not eat things strangled, nor blood, nor the flesh of swine; and above all things, they shun camel's flesh as unclean. With the other races of Egypt they now seldom intermarry, such connection being prohibited by the ecclesiastical law.—They are devotedly attached to their ecclesiastical system, and hold that their ritual is the most ancient Christian ritual in existence. They reckon in their list of saints an evangelist, with many of the most celebrated fathers and doctors of the church. They stigmatize as heretical the communions of Greece and Rome; and they regard with intense hatred those of their own countrymen who recognize the authority of the pope or the Byzantine patriarch. The church has so diminished in numbers that



A Copt.

it is computed to have in all Egypt not more than 150,000 members. It has five orders of active and secular clergy, besides the order of monks, which holds a very important relation to the rest of the church. Historically the church of Egypt is a monastic church. The beginnings of the monastic life were in its deserts; and the hermits and cenobites of the Thebaid and the Red sea coast gave the example and the impulse to all subsequent development of Christian asceticism. The head of the Coptic church is the patriarch of Alexandria, who originally resided in that city; but the patriarch Christodulos (1045–'76) transferred his seat to Cairo, where his successors have a palace, and derive a large revenue from their possessions. The patriarch holds office for life, and his authority in the church is almost absolute. Formerly he was elected by a synod of 12 bishops convened at Cairo; but at present he is selected from among the monks of the

convent of St. Anthony, near the gulf of Suez. The mode of election is as follows: A list is made out of 100 monks who are believed to be fit for the office of patriarch. Out of this number 50 are elected by a majority of votes; this number is then by vote reduced to 25, subsequently to 10, and at last to 3, one of whom is chosen by lot. He must continue unmarried and conform to his monastic customs of dress and diet and sleep. He appoints the *abuna* or head of the Abyssinian church as his suffragan. The bishops are 13 in number, and like the patriarch wear the broad round turban and are celibates. It is customary to choose them from the convents, though the canons of the church do not always require this. The youngest among the dioceses are that of Esne, an important place for the Abyssinian trade, established in the 18th century, and that of Khartoom, which embraces all Nubia, and was established in 1835. Below the bishops are the archpriests, who are sometimes at the head of the convents, and sometimes are chosen directly from the order of the priesthood. Their functions correspond to those of archdeacons in the English church. Next to these are the priests, who may be married, provided the marriage has taken place before their ordination. After that they are not allowed to marry; nor can any one be ordained a priest who has had more than one wife, or has married a widow. The priest wears a turban of peculiar shape, narrow in the rim and flattened at the top. He is not compelled to abstain from secular labors, but may earn money by a trade or a profession. The same rules apply to the *shemma*, or deacon, who is only an incipient priest. Both priest and deacon receive ordination from the hands of the bishop, or, if they live in Cairo, from the patriarch. In reality most of them, especially in Lower Egypt, are unmarried, their ranks being chiefly recruited from the convents.—The Coptic convents were once very numerous, 336, according to the legend. They were distributed through the desert of Nitria, the Thebaid, the shores of the Red sea, Nubia, and along the Nile. The sexes were separate, and nunneries were as common in Egypt as in Italy or Spain. At present their number is greatly reduced. Of monasteries proper, in which only men are admitted, there are but seven, those of St. Anthony and St. Paul in the eastern desert, four in the desert of Nitria, and one at Mount Koskam in Upper Egypt. In these the monastic rule is rigidly observed, and the old customs are kept in their integrity. In Cairo there are three convents; in Fostat or Old Cairo, and in Alexandria, two each; two in the Fayoom, where once there were 30 or more; and one in Abu Honnes, Mellawi, Ekhmin, Girgeh, Negaddeh, and other towns along the river. The best known to travellers is the Deyr el-Adra, or convent of the Virgin, which crowns the summit of a precipitous rock, the Jebel et-Tari, on the E. bank of the Nile. The white and red monasteries near Soohag are also frequently visited on account of the remarkable architecture of their churches. In the neighborhood of Abydos there is also an important convent. But in all these establishments the monks have lapsed into secular habits, the fasts are much neglected, women live with the men, and the convent is only a Christian village of greater or less extent. In the regular monasteries, such as those of Nitria and of St. Anthony and St. Paul, hard and long probation is required before initiation, and the discipline is severe. The dress is a simple shirt of coarse woollen fabric. The badge of the class is a dark blue strip of cloth, which is suspended from the turban below the back of the neck. Only on feast days is animal food allowed, and then in small quantities; the ordinary food of the brethren is black bread and lentils, and on fast days they are deprived even of this meagre fare. The convents, when not situated on some inaccessible rock, are surrounded by a high and strong wall, which has only a single iron door, and in some cases is wholly without opening, the means of entrance being a pulley from the top. In the neighborhood of these convents are the ruins of many others.—Baptism, a rite to which the Copts attach great importance, is performed by dipping the child three times into water which has received a few drops of consecrated oil. An unbaptized child will be blind in the next world. The rite ought to be administered to a male infant 40, and to a female 80 days after birth. It secures regeneration. Next to baptism is circumcision, which is performed upon boys at the age of seven years, though without any special religious ceremonies. It is more scrupulously attended to at Negaddeh than at Cairo. The Copts are as careful to observe their seasons of daily prayer as the better class of Moslems. Seven times a day they perform their lustrations, turn to the east, recite their *Pater noster*, and beg in 41 repetitions for the Lord's mercy. Their rosary contains 41 beads. Many of them go over in these seven daily exercises the whole of the Psalms. The public religious service is excessively long, lasting at least three hours before the consecrated cakes, stamped with the sign of the cross and the pious inscription, can be distributed to the people. It is accompanied by monotonous chantings, abundant burning of incense, processions of the host around the church, and the noisy beating of cymbals at intervals.—Like all orientals, the Copts decorate their houses of prayer with ornaments of ostrich eggs, rude inscriptions, and pictures of their favorite saints. Chief among these are the fighting St. George, and the hermits Anthony and Paul and Macarius, the last of whom is the especial protector of the Nitrian convents. The form of the churches and the general style of Coptic architecture is that of the Greek basilica; none of their churches are cruciform. In many instances ancient heathen temples

were converted into Christian churches. Some of the churches are still subterranean; and at Thebes a church of the catacombs has been discovered hardly less interesting than the churches beneath St. Agnese and St. Sebastian at Rome. In the ordinary construction of Coptic churches there are four compartments. At the furthest end from the doorway is the chancel, the *heykel*, which is completely hidden behind a high screen, with the doorway in the centre closed by a curtain, on which a cross is embroidered. Next to this is the part appropriated to the priests who interpret in Arabic the Coptic service to the singers, to the leading men of the congregation, and to strangers who may be present. This is separated from the next compartment by a high lattice, in which there are three doors. In this third compartment, which communicates directly with the street, are stationed the mass of the congregation. A fourth compartment in the extreme rear, or on one side, is reserved for the women. This is dimly lighted, and separated from the main room by a lattice-work partition. The women wear their veils during worship. The poor of the congregation wait during the service around the outer doorway, and receive alms as the congregation passes out. As in the mosques, every worshipper must take off his shoes before his feet touch the mats of the holy house, and must go at once to kneel before the cross on the curtain. The more devout then go round and pray in turn before the pictures of the saints, which are hung around the second apartment, giving a kiss to those within reach of their lips. During most of the service the congregation remain standing, or rather leaning upon long crutches, with which most of them are provided. The service within the heykel or sanctuary is entirely from the Coptic liturgies. No other tongue is allowed before the altar. The priests who officiate here wear ornamented vestments specially appropriated to the various religious seasons and festivals. The ordinary celebration of the eucharist requires two or three priests within the heykel, while as many more explain the lessons to the people in the next apartment. The communion is given to the clergy in both kinds, but the laity are privileged only to have cakes on which the wine has been sprinkled. The more devout confess their sins to the priests at least once in every week; and none have a right to ask for the sacred bread until they have eased their minds by such acknowledgment. The penances imposed are similar to those in the Roman church.—The regular seasons of fasting in the Coptic church include more than half the year. With the exception of the 50 days between Easter and Pentecost, every Wednesday and Friday throughout the year are "meagre days," in which meat is prohibited. Besides these, there are the fast of the Nativity, 28 days long; the fast of the Apostles, which follows the Ascension festival; the fast of the Virgin, 15 days in length, to prepare for the feast of the Assumption; and the great fast of Lent, which, with the additions that various patriarchs have made, and the preliminary fast of the prophet Jonah, extends to 58 days. In these fast seasons there is a daily service in the church, and the houses of worship are kept constantly open. There are seven principal festivals: those which commemorate the nativity, the baptism, the triumphal entry, the resurrection, and the ascension of Christ, the Pentecost miracle, and the annunciation to the Virgin. All of these festivals occur within the first half of the year, two of them in January, and the remaining five usually in April, May, and June. At the feasts *el-Milad*, Christmas, *el-Ghitas*, the baptism, and *el-Kabir*, Easter, there is a midnight service in the churches. The feast of baptism is still further honored by the custom of plunging into the river, or into a tank in the church, after prayers have been said and the water duly blessed. The men and boys together go through this ceremony, which is accompanied by a washing of the feet, performed by the priest. Besides these principal festivals, there are the feast of the Apostles, the holy Thursday and Saturday of Passion week, and the *Salib* feast in September, which commemorates the finding of the true cross. These feasts are marked by unusual show in dress, by largesses to the poor, and by indulging in ardent spirits to the degree often of intoxication.—The Copts have a convent in Jerusalem and a chapel in the church of the Holy Sepulchre, and there are perhaps 100 of their communion who reside in the holy city and welcome the pilgrims in their annual visit. The duty of pilgrimage is as binding upon Copts as upon Moslems; but the number of those who fulfil it is comparatively small.—The creed of the Coptic church is that of the Monophysites, who were condemned as heretics at the council of Chalcedon in 451. They deny the doctrine of two natures in Christ, and insist that after the incarnation there was but a single nature and a single will. In common with the Greeks, they hold that the Holy Spirit proceeds from the Father alone. It is affirmed by some writers that they believe the doctrine of transubstantiation; but this is denied by the Coptic priests, who hold to a theory more like the Lutheran than the Catholic. The number of sacraments is seven, but these differ in several particulars from the Roman sacraments, faith and prayer being substituted for matrimony and extreme unction. They acknowledge as authoritative only the three councils of the church which preceded the council at Chalcedon, viz.: of Nice, of Constantinople, and of Ephesus. The general name by which the Egyptian church is known in controversy is that of Jacobite, which name was applied to them as the followers of the Eutychian Jacobus Baradæus, one of the chief apostles of the heresy. This heresy they share with the Abyssinians, with whom indeed in most particulars of doctrine

and practice they sympathize. There is a convent of Abyssinian monks in the Nitrian desert; they share the same chapel at Jerusalem; and the abuna of the church of the mountains is dependent on the head of the church of Egypt.—Portions of three separate versions of the Scriptures into the Coptic tongue have been found among the MSS. brought from the Egyptian monasteries, which were probably made in the beginning of the 4th century. Of these, that used in Lower Egypt and the Nitrian desert is called the Memphitic; that used in Upper Egypt, the Thebaic; and the third, which it is conjectured may have been used in the eastern part of the Nile delta, the Bashmuric. The Thebaic version, which is often called the Sahidic, is the most important in the textual criticism of the New Testament; while the Memphitic, which is usually styled the Coptic, has the most authority in the existing Egyptian church. The first printed edition of the Memphitic New Testament was issued by David Wilkins (4to, Oxford, 1716), with a Latin translation. A later and more accurate edition was begun by the Prussian Schwartze in 1846, but only the four Gospels were published before his death. Since 1852 Dr. Paul Bötticher of Halle has published the Acts of the Apostles and the Epistles. Another edition, under the superintendence of Dr. R. T. Lieder of Cairo, has been published by the London society for promoting Christian knowledge. The Thebaic version has been collated and fragments of it published since 1779 by Woide, Mingarelli, Giorgi, Münter, and Ford. Fragments of the Bashmuric version have been published by Zoëga and Engelbrecht.—The Copts have three liturgies. The principal is a translation from the Greek liturgy of St. Basil, in which, however, several alterations are made to adapt it to the variations in doctrine and discipline. Another, which bears the name of St. Gregory, was probably borrowed from the Armenian church (of which Gregory was the apostle and founder), after that church lapsed into the Eutychian heresy. A third is doubtfully attributed to the Alexandrian Cyril, who in all the churches of Egypt has great authority, and is honored by the pompous title of "doctor of the world." Of these liturgies there are Arabic translations in use in all the churches. Most of the priests are unable to understand their sacred dialect except in a translation. (See Coptic Language.) —In 1442 the Copts were prevailed upon to enter into communion with Rome; but the union was soon dissolved. In 1713 the Coptic patriarch again recognized the supreme authority of the pope, but this act appears not to have had any lasting results. The missionaries of the Roman Catholic church, in particular the Franciscans and reformed Minorites, succeeded in gaining over a number of Copts for a reunion with Rome, and thus established a united Coptic church, for which the pope in 1781 instituted a vicariate apostolic, which still exists. The vicar apostolic, who is a bishop *in partibus*, resides at Cairo, and in his house young men who wish to devote themselves to the ministry receivè free board and instruction. Since 1840 the vicar apostolic has also had under his jurisdiction as delegate of the apostolic see the church of Abyssinia, to which country the Propaganda at that time intended to send a bishop of the Coptic rite. The number of united Copts is estimated at about 3,500, who have 9 churches, 7 chapels, and 25 priests.—The average morality of the Copts in Egypt is about the same as that of the other races, with the single exception of the vice of drunkenness. The Copts whom travellers usually meet are of the more respectable class, and hide their avarice under the mask of courtesy. They are more familiar and fluent than the Turkish effendis, and show in their intercourse none of that contempt for the infidel which the most polite Moslem can hardly refrain from manifesting. The domestic customs of the Coptic people differ but slightly from those of the Arabs of the Nile valley. There are some peculiarities, however, in their marriage ceremonies. The Copt bride, unlike the Moslem, has no canopy to cover her in the procession to the bridegroom's house; at the preliminary feast pigeons are released from pies and fly around the room shaking bells attached to their feet; in the church, besides the sacrament of communion, there is a ceremony of coronation, and the priest sets on the foreheads of the new couple a thin gilt diadem; the bride, in entering her husband's house, must step over the blood of a newly killed lamb; and the whole pageant, after lasting eight days, ends with a grand feast at the bridegroom's house. This is the custom with the wealthy and on the occasion of a young girl's marriage. The poor are wedded more simply, and no parade is made when a widow goes to the house of her second husband. All marriages, to be religiously lawful, must be licensed by the patriarch or bishop; but as civil contracts marriages licensed by the cadi are valid, and many of the poorer Copts prefer the disgrace of that resort to the extortion of their own spiritual rulers. Such marriages, moreover, are more easily dissolved than those which the priest solemnizes. The respectable Copt women live in the harem in seclusion. The wife's adultery is the only ground for divorce, notwithstanding that the incontinence of the husband is regarded as a sin. In most of the cities and large towns the Copts form but a fraction of the population. In the city of Cairo they have been estimated as high as 60,000; other writers put their number at 30,000, 20,000, or even 10,000. At Negaddeh, in Upper Egypt, there are 2,500; and Minieh, Osioot, Ekhmin, and Girgeh have each a considerable Coptic population. The whole race, from the sea to the Nubian frontier, number somewhat more than a 15th of the entire population of Egypt. In Nubia

they are not found.—The history of the Copts in Egypt, from the time of St. Mark to the Arabic conquest, is the history of the land itself. The names of their patriarchs, scholars, and anchorites, Clement, Origen, Athanasius, Cyril, Dionysius, Anthony, Macarius, and many more, belong to the annals of the Christian church, and are commemorated both in the Roman and Greek calendars. From the 3d to the 6th century Egypt had great influence in settling the doctrines of faith; its patriarch was the rival of the Roman bishop; its hermitages were the most attractive shrines of pilgrimage, and in its solitudes the persecuted believers found safety. From the latter half of the 5th century the controversy between the Melchite or royalist party, who adhered to the creed of the Greeks, and the Jacobite party, who were Eutychians, was vehemently maintained for more than a century, the victory inclining more and more to the Jacobite party. The pacific policy of Zeno for a time restrained open warfare; but in the succeeding reigns of Justin, Justinian, Phocas, and Heraclius the strife of arms was added to the strife of words, and bloody persecutions were carried on. In vain Apollinarius, at once prefect and patriarch, attempted by threatening and massacre to convert the Jacobite masses; roused by their zealous bishops, they returned defiance, and early in the 7th century all Christian faith not Monophysite was heresy from Alexandria to Syene. To quarrels with the Greeks succeeded quarrels with each other about minor points. Theodore and Themistius discussed the question concerning the wisdom of Jesus, the latter expressing the belief that Jesus was not omniscient. John the Grammarian affirmed that there were three Gods, and rejected the word unity from the doctrine of the being of God. In the five years of his administration as patriarch, from A. D. 611, John the Almsgiver made more converts by his zeal in good works than by his zeal against the Greek heresy; yet he was not acknowledged as a genuine patriarch, since he was appointed to office by the emperor, and followed the imperial party when it was driven from Alexandria by the invading Persians. In the ten years of Persian rule the patriarch was a true Copt. When the Romans regained power, the Jacobite Benjamin was displaced, and for a short time the church of Egypt had a ruler whose opinion was a compromise between the Greek and Jacobite views, maintaining two natures in Christ, but only a single will. In the great strife between the Greeks and the Arabs, which occupied the succeeding years, the Coptic church secretly inclined to the Moslem party, and it has been charged against them that their connivance with Amru and his army decided the contest in favor of the religion of the prophet. But if they were promised amnesty and protection, the promise was not long kept. Within a century from the fall of Alexandria the hands of monks were branded, and heavy annual imposts exacted of them, and such as refused to pay were scourged, outraged, and even beheaded; many of the churches, too, were destroyed and plundered. In the reign of the caliph Hashem (724–743), the Melchite dispute was revived by the restoration of some of the Greek bishops to their ancient sees in Nubia, and bribes by one and the other party swayed the authorities in either direction. In 755 it was forbidden to any Copt to hold any public office, even if he should embrace Islamism. In the time of the Abbasside dynasty the humiliations of the Copts were multiplied; the caliph Mutawackel compelled them to wear disgraceful articles of dress, and to fasten on their doors pictures of devils; and a century and a half later the mad Fatimite caliph Hakem prescribed for them the black robe and turban, ordered them to wear suspended from their necks a heavy wooden cross, confiscated their churches, and finally decreed their banishment. To save themselves from these heavy penalties great numbers apostatized, and in the following centuries the number of Christians steadily decreased. In 1301 an edict was issued requiring all Christians to wear blue turbans, and forbidding them to ride on horses or mules. Fresh conversions to Islam were the result of this edict. In 1321, by a bold conspiracy, the Moslem zealots destroyed simultaneously all the Egyptian churches, many of which were overturned from the foundations. The Christians retaliated by burning in Fostat and Cairo a large number of houses, palaces, and mosques. The punishment for these outrages, though it fell upon some of the Arabs, bore more severely upon the Christians. Some were hanged, some were burned alive, and leave was given to all Moslem subjects to rob and murder any Christian who might be seen wearing the white turban. No government official was permitted to employ a Copt. At the baths they were distinguished by a bell hung from the neck. Very numerous changes of faith resulted from this persecution, and at the end of the 14th century the condition of the Copts in numbers and influence had reached its lowest point, at which it continued with but little variation until the present century. Under Mehemet Ali and his successors, the Copts have had no occasion to complain of unreasonable taxation or of violated rights. Their exemption from military service, which seems to be a disgrace, is in reality a privilege, and is so regarded by most of their body.—A full statement of Coptic history may be found in vol. ii. of Quatremère's *Mémoires géographiques et historiques*. The most condensed account of their manners and customs is given in Lane's "Manners and Customs of the Modern Egyptians." Sir Gardner Wilkinson has given some valuable notices of the Copts in his work on Egypt, and Mr. Curzon has described the appearance and condition of their convents

and MSS. A good account of the Coptic versions may be found in the "Introductions to the New Testament" by Hug and Tregelles. Burckhardt, Bunsen, and Lepsius have furnished many important incidental notices, and the Arabic historian Makrizi has treated of the fortunes of the subject people in his elaborate account of their conquerors, and of Moslem rule in Egypt.

COPYRIGHT, a right conferred by law upon an author or his representatives to the exclusive sale or use of his intellectual productions. Owing probably to the circumstance that the ideas of property originated in an age of violence, the first laws recognizing property referred wholly to material things; and long before intellectual property acquired a pecuniary value, the laws of property in modern society were established, and it became difficult to admit a new object of property among those recognized by the ancient law. Since 1774 the law of England has been regarded as settled against the perpetual right of the author to his work, and the copyrights of authors in that country as well as in the United States are deemed property only by virtue of statute law. The copyright conferred by the statute applies only to works after publication. Before publication an author has the common law right of property in his manuscript, or other unpublished production. In England, by the act of 1842, copyright extends to 42 years, or for the life of the author and seven years thereafter, whichever period shall prove the longer. Protection is extended to books, maps, charts, pamphlets, magazines, engravings, prints, dramatic and musical compositions, paintings, drawings, photographs, sculpture, models, busts, and designs. Lecturers are also entitled to copyright on their lectures, and musical composers and dramatic authors may secure the sole right of performing their compositions or pieces for the term for which copyrights are granted. In order to secure a copyright an entry is made in the registry books at stationers' hall of the title of the work, the time of its publication, and the name and residence and interest of the proprietor or proprietors. A copy of every book is to be delivered within a month after publication to the British museum, and four copies at stationers' hall, for Oxford and Cambridge universities, the Edinburgh faculty of advocates, and Trinity college, Dublin. The first publication of the book must be within the realm; but such publication may be contemporaneous with publication abroad.— In the United States the authority over this subject is in congress. The act of 1870, which is a substitute for all previous statutes relating to copyright, permits any citizen or resident of the United States who shall be the author, inventor, designer, or proprietor of any book, map, chart, dramatic or musical composition, engraving, cut, print, or photograph or negative thereof, or of a painting, drawing, chromo, statue, or statuary, and of models and designs intended to be perfected as works of the fine arts, to secure a copyright thereof for 28 years, and gives a right to renewal for himself, his widow or children, for 14 years more; and authors may reserve the right to dramatize and translate their own works. The statute also gives to the author of a dramatic composition the sole liberty of publicly performing or representing it, or causing it to be performed or represented by others. A copy of the title of the book or other article, or a description of the painting, statue, &c., must be sent to the librarian of congress before publication, and two copies of the book, or in case of a painting, &c., a photograph of the same, must be sent to such librarian within ten days after publication. The librarian makes the proper record, receiving 50 cents therefor, and 50 cents for any copy, and there is also a small fee for recording and certifying assignments. A copy of any new edition is also to be sent to the librarian, and a penalty of $25 is imposed for any failure to forward such book, &c. The fact of the entry with the librarian is to be stated in each book or on each other article, and a failure to do this will preclude any action for infringement; while the publication of an entry not actually made subjects the party to a forfeiture of $100. Under previous statutes copyright was secured by depositing a printed copy of the title of the work in the office of the clerk of the district court in the district where the author or proprietor resided. The penalty for infringement of the copyright of a book is a forfeiture of the books printed, imported, &c., and such damage as a court may award; in case of maps, charts, prints, cuts, musical compositions, &c., a forfeiture of the plates, sheets, &c., and $1 for every sheet in possession of the guilty party; and in case of a painting, statue or statuary, $10 for every copy in possession; and in case of a dramatic composition, the damages which may be assessed, which shall not be less than $100 for the first and $50 for every subsequent representation. Authors are by the same law protected against the surreptitious publication of their manuscripts, and may recover damages therefor. In England ornamental and useful designs on articles of manufacture, &c., may be copyrighted; but in the United States designs come within the scope of the law concerning patents. It has been held both in England and America that newspapers are not protected by the copyright laws. Copyright is transferable to heirs and assignees. To entitle an author to copyright, his work must be original, and must not have been published or dedicated to the public prior to the application for copyright. Abandonment to the public before copyright renders the work common property, and defeats copyright. — Prior to 1845 the capacity of a foreign author to acquire, or at least to confer upon a British subject, valid copyright, does not seem to have been denied by the English courts. The ques-

tion was first thoroughly discussed in a court of law in that year, when it was held that a foreigner was entitled to the benefit of the statutes if he had given England the advantage of the first publication of his work. It was not till 1849 that the doctrine was absolutely announced by a court of law that a foreigner resident abroad could not acquire copyright in England or confer a valid title upon an English subject. After much change of opinion on this subject in the English courts, the question was decided by the house of lords in 1854, after an elaborate and exhaustive discussion in the case of Jefferys *v.* Boosey. The judges were nearly evenly divided in their opinions, but the judgment of the house of lords was that neither at common law nor by statute would English copyright vest in a foreign author while resident abroad. This uncertainty arose from the fact that the language of the statutes passed for the encouragement of learning, from the reign of Anne to the present time, has been general, extending protection to "authors," and leaving the courts to determine whether that expression included all authors or was limited to British authors. By this and other more recent decisions it has been settled in England that copyright will vest in any person, whether foreigner or citizen, upon three conditions: 1, publication must be in the United Kingdom; 2, there must have been no previous publication; 3, the author must have been at the time of publication within the British dominions. In the case of an English subject, however, presence within the realm is not necessary. When copyright has once vested, protection extends throughout the British dominions, including all parts of Great Britain and Ireland, and all the colonies, settlements, and possessions of the crown. It will thus be seen that the place of publication is limited to a less area than that throughout which protection extends, and within which the presence of the author at the time of publication is required. There may be a contemporaneous publication of the same work abroad, but a prior publication will defeat the copyright. A foreign author therefore may acquire a valid English copyright by first publishing in Great Britain, or publishing there on the day of publication elsewhere, if he be anywhere within the British dominions at the time of such publication. In order to meet this requirement of the law, it has not been uncommon for American authors to go to Canada and remain there during the publication of their work in England, thus acquiring a valid English copyright. In the United States, by the several copyright statutes that have been passed, from the act of 1790 to that of 1870, congress has expressly excluded foreigners from the benefits of copyright, extending protection only to such author as may be a "citizen of the United States, or resident therein." The judicial construction given to the word "resident" is that it refers to a person residing in the United States with the intention of making that country his place of permanent abode. A formal declaration of such intention is not necessary, nor is any definite period of time indicated as requisite to constitute such residence. The question is determined by the intention of the person at the time he has his abode here, and by his acts so far as they go to show what that intention was. If, at the time of recording his title in order to procure copyright, a foreign author is residing in the United States with the intention of making that country his place of permanent abode, he becomes a resident within the meaning of the act, and entitled to copyright without regard to the length of time of such residence, and notwithstanding the fact that he may subsequently return to his native country. On the other hand, if such author intends to remain temporarily, but actually remains for a long period, he is a mere sojourner, and does not acquire a residence so far as to be entitled to copyright. The assignee of a foreign author, though a citizen of the United States, holds the same relation under the statute as the author himself; so that a citizen is not entitled to copyright in a work which he has purchased from a foreign author. —In Great Britain provision is made for international copyright with such nations as may extend reciprocal protection to British authors. This is effected by an "order of her majesty in council," by which a foreign author resident abroad, by complying with the statute regulations as to registration, delivery of copies, &c., may secure protection for his work in Great Britain. In these cases it is not essential that first publication shall be in England. There are arrangements for international copyright with France, Prussia, Saxony, Hanover, Belgium, Spain, Italy, and other powers. An arrangement exists between England and France by which the author of a work published in either country may reserve to himself the exclusive right of translating such work for five years from the first publication of the translation authorized by him. No arrangement for international copyright has been entered into by the United States. The leading publishers in the United States are nevertheless accustomed to make a liberal allowance to British authors of established reputation from the profits on their books republished in this country. The difficulty of protecting British copyrights in the colonies has led to the laying of heavy duties for the benefit of their owners on reprints, copies, &c., imported.—In France and Belgium an author, and his widow after him, is entitled to a copyright for life, and the children for 20 years after; and in France the other heirs or assignees for 10 years, and in Belgium for 20 years after the death of the author or his widow. In Germany the copyright is for life and 30 years after. In Greece it is for 15 years from date of publication. In Russia copyright endures for life, and after the death

of the author passes to his heirs and assignees for 25 years, and for the further term of 10 years if they shall publish an edition within five years before the expiration of the first term.—Although there had been licensing acts prohibiting the publication of books without the consent of the owner, the first copyright act in England securing to authors the right of property in their works was the statute 8 Anne, chap. 19, passed in 1709. After reciting that "printers, booksellers, and other persons have of late frequently taken the liberty of printing, reprinting, and publishing, or causing to be printed, reprinted, and published, books and other writings without the consent of the authors or proprietors of such books and writings, to their very great detriment, and too often to the ruin of them and their families," it provided that after April 10, 1710, the authors of books already printed who had not transferred their rights, and the booksellers, &c., who had purchased copies, should have the sole right of printing them for 21 years; and that the authors of unpublished books and their assigns should have the sole right of printing the same for 14 years, at the expiration of which the sole right of printing or disposing of copies should return to the author, if living, for another term of 14 years. In 1769 a judgment was rendered by the court of king's bench, Lord Mansfield presiding, in the case of Miller *v.* Taylor, recognizing a perpetual property at common law in the author and his assigns. The work in controversy was "The Seasons," by James Thomson, the term of years secured by the statute of Anne having expired. This decision, however, was not long acquiesced in, and in 1774 the house of lords, in the case of Donaldson *v.* Beckett, declared against the common law right of property in books, although the weight of authority and numbers among the judges was in favor of the perpetuity at common law; and upon the question whether such right was taken away by the statute the judges were divided in opinion. In 1775 an act was passed by parliament which enabled the universities in England and Scotland and several colleges to hold in perpetuity their copyright in books given or bequeathed to them. In 1814 the term of copyright was fixed at 28 years, and during the life of the author if living at the expiration of that period. In 1833 the act 3 William IV., ch. 15, was passed, giving to the authors of dramatic compositions the sole right of representing their plays or causing them to be represented. This was followed by the international copyright act passed in 1838, giving a copyright in England to foreign authors whose governments had extended the same privilege to British authors. In 1842 the laws relating to copyright were revised, the term extended to the life of the author and for seven years after his death, or to 42 years from the first publication. This law, 5 and 6 Victoria, ch. 45, with some slight changes, still remains in force. The first copyright law in the United States was passed in 1790. The term for books then published was 14 years, and for unpublished books the same period with provision for renewal for 14 years. In 1831 a general copyright law was passed granting copyright for 28 years, and providing, for a renewed term of 14 years. In 1856 an act was passed giving to authors the exclusive right of publicly representing or causing to be represented their dramatic compositions. In 1870 all the statutes relating to copyright were repealed by the general copyright law which is now in force.

COQUEREL. I. Athanase Laurent Charles, a French Protestant clergyman, born in Paris, Aug. 27, 1795, died there, Jan. 10, 1868. He studied at the divinity school of Montauban, and was ordained in 1816. The next year he was invited to become pastor of the Episcopal chapel of St. Paul in the island of Jersey, but was unwilling to subscribe to the thirty-nine articles. After preaching for 12 years to the Walloon congregations at Amsterdam, Leyden, and Utrecht, he was in 1830 invited to Paris by Cuvier, then minister of Protestant worship, and succeeded M. Marron as pastor in the Reformed church; and in 1833 he became a member of the consistory. He was a very successful preacher, and was also much interested in the subjects of education, and from 1831 to 1848 lectured on religion in the school of St. Victor, afterward the Chaptal college. For defending the university against a determined attack, he was rewarded in 1835 with the decoration of the legion of honor. In 1841 he was appointed Protestant chaplain of the collége Henri IV. From 1831 to 1833 he edited the *Protestant*, a religious, political, and literary journal, and from 1834 to 1836, in conjunction with M. Artaud, the *Libre Examen*. In 1841, with the help of some pastors of like views, he started the *Lien*, of which he was for a time the principal editor, and which he relinquished in 1844 to his brother, and subsequently to his sons. He took a prominent part in the discussions called forth by a religious revival which prevailed in England, Switzerland, and the Protestant churches in France, opposing the supporters of the movement, and declaring his opposition to the old Calvinistic theology, the doctrines of predestination, eternal punishment, and expiation, although he maintained against the German rationalism the inspiration of the Scriptures and the doctrine of the fall. He was opposed in the ministry of public worship, as well as by the evangelical school of Protestants, and in 1835 was refused settlement in a chapel at Batignolles which he had been mainly instrumental in founding. His reputation and popularity grew in spite of opposition, and in 1848 and 1849 he was elected a member of the constituent and legislative assemblies, where he acted with the moderate republican party. After the *coup d'état* of Dec. 2, 1851, he retired from political life, and devoted himself wholly to religious work. In 1853 he

joined in the organization of the *Alliance chrétienne universelle*, which was designed to unite on a common basis the members of the Greek, Latin, and Protestant churches. Since 1852 M. Coquerel had been one of the central council of the Reformed churches, and in 1867 became its president by seniority. In this position he urged his colleagues to concede something to liberal views, but without success. He wrote 700 or 800 sermons, of which a great number have been printed, forming 8 vols. Besides these his principal works are: *Biographie sacrée* (1837); *Histoire sainte et analyse de la Bible* (1838 and 1842); a reply to Strauss's "Life of Jesus" (1841; *Orthodoxie moderne* (1842); *Le Christianisme expérimentale* (1847); *Christologie, ou Essai sur la personne et l'œuvre de Jésus-Christ* (1858); *Méditations sur des textes choisies de l'Ancien et du Nouveau Testament* (1859); *Observations pratiques sur la prédication* (1860); and *Projet de discipline pour les Églises réformées de France* (1861). Many of his works have passed through several editions, and been translated into English and other languages. **II. Charles Augustin,** a French author, brother of the preceding, born in Paris, April 17, 1797, died there, Feb. 1, 1851. He was brought up with his brother by their aunt Helena Maria Williams, an English authoress, at whose house he met Humboldt and other celebrated men. He studied at the divinity school of Montauban, but in 1815 went to Paris and devoted himself to general science and literature, studying medicine under Broussais, chemistry under Gay-Lussac, mathematics under Ampère and Biot, and astronomy under Arago. In 1821 he published the *Annuaire protestant*, the earliest work of the kind in France. He was one of the founders of the *Revue Britannique* (1825), and contributed also to the *Revue protestante*. Among his published works are: *Caritéas* (1827); *Histoire de la littérature anglaise*, and *Essai sur l'histoire générale du Christianisme* (1828); and *Histoire des Églises du désert*, his most important work, a record of the sufferings of the French Protestants since the revocation of the edict of Nantes. **III. Athanase Josué,** son of Athanase Laurent Charles, born June 16, 1820, died in July, 1875. He studied theology at Geneva and Strasburg, was ordained to the ministry at Nîmes in 1843, and became assistant pastor in that city. In 1848 he was appointed Protestant chaplain of the collége Henri IV., and subsequently of the Chaptal college, a post which he held for 20 years. On Nov. 15, 1850, although opposed by orthodox leaders, he was appointed by the consistory of Paris an assistant pastor, and was reappointed in spite of increasing opposition in 1853, 1856, 1859, and 1861. Having succeeded to his father's position as editor of the *Lien* and afterward of the *Nouvelle Revue de Théologie*, he published in the *Lien* the constitution of the newly formed liberal Protestant union, and in 1863 an appreciative though qualified notice of Renan's "Life of Jesus." In consequence of this he was at length, Feb. 26, 1864, suspended from the ministry by the consistory of Paris, while the consistory of Anduze voted him an address of sympathy. In 1867 he gave a series of lectures against the doctrinal authority of the Apostles' creed. In 1871 he visited the United States, and lectured during the winter in several cities. He received the decoration of the legion of honor in 1862. Besides many pamphlets, sermons, and articles, he has published *Des beaux arts en Italie, au point de vue religieux* (1857); *Jean Calas*, a historical study (1858); *Précis de l'histoire de l'Église réformée de Paris* (1862); *Des premières transformations historiques du Christianisme, Pourquoi la France n'est elle pas protestante?* and *Les forçats pour la foi*, a sketch of the Protestants condemned to the galleys by Louis XIV. and Louis XV. (1866); *La conscience et la foi* (1867); and *Libres études* (1868).

COQUILLA NUTS, the fruit of the Brazilian tree *attalea funifera* (Martius) or *cocos lapidea* (Gärtner). The nuts are nearly solid shells, commonly containing two small kernels of disagreeable flavor. They are valued only for the solid portion of the shell, which is of very close texture, brittle and hard, and of a hazel-brown color. It is susceptible of a high polish, works well in the lathe, and is an excellent material for small ornamental works, as toys, heads of umbrellas, parasols, &c.



Coquilla Nut and Palm.

COQUIMBO. I. A N. province of Chili, lying between lat. 29° and 32° S., and lon. 69° 30′ and 71° 35′ W., bounded N. by Atacama, E. by the Argentine Republic, S. by Aconcagua, and W. by the Pacific; area, 13,300 sq. m.; pop. in 1870, 159,698. The surface is mountainous, but there is only one volcano within its limits, that of Limari. The Chuapa, on its S. boundary, the Illapel, Coquimbo, Barrazo, and Tongoy, are the principal streams, all of which are small and from the rapidity of their

descent unnavigable. The banks of most of them are high and steep, and they can be crossed only by means of hanging bridges of rope. The climate is healthy and delightful, and the soil, where capable of cultivation, is productive. Fruit is abundant, especially figs and grapes, but not enough grain is raised for consumption. The province is rich in minerals, particularly in silver and copper. Gold, lead, and quicksilver are also found. The copper mines are numerous and extensively worked. The chief industry is the smelting of this metal, which is carried on to such an extent that much ore is imported from the north of Chili and from Bolivia, in addition to what is mined in the district. Its ports are Coquimbo, Guayacan, Tongoy, and Totoralillo. **II.** The capital of the province, also called La Serena, on the river Coquimbo, not far from its mouth, 255 m. N. N. W. of Santiago; lat. 29° 54′ S., lon. 71° 16′ W.; pop. about 15,000. The city is regularly built, with streets generally at right angles, and in the S. part there is a large plaza. The houses, which are mostly of one story, stand apart surrounded by gardens. Among the principal buildings are several churches and convents, a public school, and a hospital. It has also water and gas works. It is a bishop's see.—The town was founded in 1542, by Francisco de Aguirre, who called it La Serena from his native town in Spain. The port of Coquimbo, which is several miles distant on the bay, is one of the best harbors of Chili. It is spacious and safe in all seasons, and, notwithstanding the scarcity of wood and water, is much frequented. The exports are chiefly copper in bars, ingots, regulus, and ores, some silver and cobalt, and hides. The imports are mostly coal, mining materials, and provisions.

CORAL (Gr. *κοράλλιον*; Lat. *coralium*, *curalium*, or *corallum*). The derivation and use of this term are discussed by Theophrastus in his work on plants. Such were these stony products of the ocean naturally believed to be, from their growth resembling that of the productions of the garden. Imitating the forms of trees and flowering shrubs, they rivalled them in gracefulness and delicacy; and the brilliant hues of the blossoms that crowned them made permanently beautiful these gardens in the depths of the sea. And when at last Peysonnel, in an elaborate memoir sent to the royal society in 1751, supported the opinion (first advanced by the Neapolitan naturalist Ferrante Imperato in 1599) that the coral blossoms, *les fleurs du corail* (so described in 1706 by Marsigli), belonged to the animal and not to the vegetable kingdom, his views met with a cool reception among naturalists, and were pronounced even by Réaumur too absurd to be discussed. The power of vegetation to produce stately forests and the minutest plants was familiar to naturalists. To ascribe still greater power and as elaborate skill to "poor, helpless, jelly-like animals," seemed like an insulting demand upon their credulity. The controversy was continued through the greater part of the last century. The coral animals were shown in form resembling blossoms, sending forth their petal-like tentacles in series around the mouth, and drawing into this their prey. Still Linnæus would admit their possession only of a nature intermediate between plants and animals, and the word zoöphyte (Gr. *ζῶον*, animal, and *φύειν*, to grow like a plant) was applied by him to the organic bodies, with reference to their supposed relation to both kingdoms. The word is still in use with naturalists as a distinctive term for the division of animals in which the sponges are included. The whole compound animal mass produced by budding is called by Prof. J. D. Dana a zoöthome (Gr. *ζῶον*, animal, and *θωμός*, a heap), and the single animal is called by him a polyp.—Coral is the stony frame which belongs to these animals, as a skeleton belongs to an individual of the higher orders of the animal kingdom. It is called by Prof. Dana the corallum, and the coral of a single polyp in the mass is called a corallet. It is formed within the

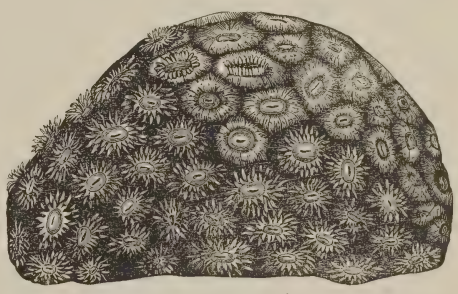


Fig. 1.—Coral Animals (Astræa pallida).

mass of them by animal secretion, each individual adding to the common structure, not by actual effort directed to this purpose, but by the involuntary secretion of calcareous matter. Hence it will be seen that corals are not, as formerly supposed, the products of the labor of the coral animals, but are the results of a growth analogous to that of the bones in other animals. A single polyp of the genus *astræa* (see fig. 1), for instance, has a disk above surrounded with tentacles, like the actinia or sea anemone, to which it is closely allied; the mouth at the centre of the disk opens into a stomach, and is the passage for the food and for the exit of refuse matters. Below and around the stomach space is divided radiately by a series of pairs of fleshy plates, the larger of which extend from the stomach to the sides of the polyp. The coral is secreted between the plates of these several pairs, as well as through the tissues; and hence comes the radiate character of the interior of the cells over the surface of a coral, that is, the star-like interior of each corallet. The material of the coral is carbonate of lime, or the same that constitutes limestone, and it is taken by the polyp from the sea water or from its

food. Fig. 2 represents the coral of a single polyp, one of the larger simple kinds, reduced to one fourth its natural size. When alive the whole corallum was concealed by the fleshy



Fig. 2.—Fungia echinata.

exterior; the mouth was situated over the middle portion of the median furrow from which the calcareous plates radiate outward; and these radiating calcareous plates of the coral were secreted between pairs of fleshy plates, as stated above. Fig. 3 represents one of the branching corals; in the living state each little prominence was the interior of a separate flower-like polyp.—Coral polyps, besides producing eggs and young like other animals, generally multiply also through a process of budding which is closely like growth by buds in the vegetable kingdom. A new polyp commences as a mere prominence on the side of an old one; soon the mouth and tentacles appear; then both continue growing, each adding to the calcareous accumulation within,



Fig. 3.—Branching Coral.

and each sending forth new buds to be developed into new polyps. According to the manner in which the buds develop the mass receives its shape. In some species they branch out into tree-like forms from the buds putting forth laterally. In many species of the madrepore family each branch terminates in what is called the parent polyp, this terminal polyp continuing to grow on and at the same time making new polyps for the sides of the branch by the process of budding. In a few species of other kinds each polyp forms a separate branch, at the termination of which it is seated; at these extremities the growth goes on, while the stem below is left behind dead. Other species, in which the polyps form massive corals, put forth the young polyps in the spaces which are produced between the older ones as these extend upward, or they make new ones by a subdividing of an old polyp; thus keeping the hemispherical form symmetrical, till in a single astræa dome a diameter of even 12 ft. has been attained, and the polyps, each occupying a square half inch only, have increased to more than 100,000 in number. Many polyps are of still smaller dimensions. A porite of the same size should con-

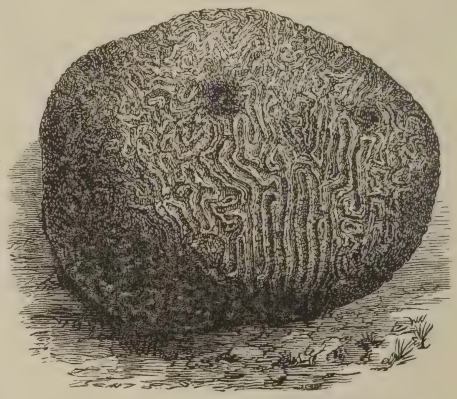


Fig. 4.—Meandrina (Diploria) cerebriformis.

tain, according to Prof. Dana, more than 5,500,000 individuals. The genus is often met with over the coral reefs, in rudely shaped hillocks sometimes measuring 20 ft. across. Fig. 4 represents a kind, related to the astræas, called brain coral, in allusion to the meandering furrows over the surface. Here, instead of each polyp having a separate cell with its mouth over the centre of it, there are a large number of polyps coalesced along a single furrow, many mouths being visible in the living meandrina along the bottom of the furrow, and a row of tentacles along either side. In addition to the hemispherical forms seen in the star coral (*astræa*) and the brain coral (*meandrina*), and the madrepore shrubs and trees, Prof. Dana remarks that "some species grow up in the form of large leaves rolled around one another like an open cabbage, and cabbage coral would be no inapt designation for such species. Another foliated kind consists of leaves more crisped and of more delicate structure, irregularly grouped; lettuce coral

would be a significant name. Each leaf has a surface covered with polyp flowers, and was formed by the growth and secretion of these polyps. Clustered leaves of the acanthus and oak are at once called to mind by other species; a sprouting asparagus bed by others. The mushroom is here imitated in very many of its fantastic shapes, and other fungi, with mosses and lichens, add to the variety. Vases of madrepores are common about the reefs of the Pacific; they stand on a cylindrical base, which is enveloped in flowers when alive, and consist of a network of branches and branchlets, spreading gracefully from the centre, covered above with crowded sprigs of tinted polyps. The actiniæ may well be called the asters, carnations, and anemones of the submarine garden; the tubipores and alcyonia form literally its pink beds; the gorgoniæ and melitæas are its flowering twigs; the madrepores its plants and shrubbery; and astræas often form domes amid the grove a dozen feet or more in diameter, embellished with green or purple blossoms which stud the surface like gems, while other hemispheres of meandrina appear as if enveloped in a network of flowering vines." Over the surface of all these corals each depression is the site of a polyp; and the radiated form of this cell corresponds in its plates to the similar structure of the animal. As young polyps are produced, they communicate for a time or permanently with the parent stock, through the internal cavity, in some species each having in the early period of growth nothing externally to mark its separate existence but a new mouth and incipient tentacles. In a living polyp, the tentacles are expanded and made rigid by injection with sea water. When disturbed, the water is ejected, the tentacles contract and disappear beneath the margin of the disk which is rolled inward over them, and conceals also the mouth. In many even of the larger corals the living portion is but a thin outer part of the mass, the rest having become dead by the drying up of the tissues as growth went on. The various forms of coral are produced by as many species of polyps. A large number of kinds are described and figured by Prof. Dana in his great work "On Zoöphytes," and a general review of the subject, illustrated by many figures, is given in his "Coral and Coral Islands" (New York, 1872).—Among the tribes of corals, some species or other are found in all oceans from the equator to the polar regions, and to the lowest depths explored by man. But the range of individual species and families is limited by the physical conditions of light, heat, pressure, &c., appropriate to their organization. Those tribes which produce the great coral reefs, as the astræas, madrepores, meandrinas, &c., are developed with peculiar luxuriance in the warmest parts of the Pacific, where the temperature varies from 75° to 85°; but they are also found in waters the temperature of which during the coldest winter months does not fall below 68°, and in other oceans and seas. Two isothermal lines of 68°, one N., the other S. of the equator, near the parallel of 28°, but varying therefrom according to the marine currents and the vicinity of continents, will include all the growing coral reefs of the world. The higher the temperature, the greater is the profusion and variety of the coral reefs. The range in depth of the reef-forming corals appears to be limited to 120 ft., and comparatively few are found below half that depth. This statement may at first sight seem inconsistent with the fact that coral is often found extending from a few feet to hundreds and even thousands of feet below the surface of the sea. Various theories have been advanced to account for this, but they have all been rejected, and the explanation first offered by Mr. Darwin is now very generally adopted by the scientific world. Mention has already been made in the article Atoll of the coral reefs of the Pacific, where they are traced in barriers for hundreds of miles; and also of the annular form of many of them, the reef surrounding shallow basins, while the waters outside are often of unfathomable depth. According to Mr. Darwin's theory, which is supported and more fully developed by Prof. Dana in his recent work above mentioned, the bottom of the ocean where these atolls are found has been for ages slowly subsiding, while the coral reef has *pari passu* been growing upward. Hence, while the living coral has never existed more than 50 or 100 ft. below the surface of the water, the coral rock, the product of former ages, exists at immeasurable depths. The dead corals and shells of the coral seas become ground up by the waves as they sweep over the reef, and thus the beds of coral débris are made which become by consolidation the coral reef rock. This reef rock differs in no important particular from the great limestone strata which are spread over large portions of the western states, and which testify by the corals they contain, and the other fossils associated with them, to a similar mode of production. The fine white mud which is made by trituration much resembles when dried the ordinary white chalk of Europe. It is often spread over the bottoms of the lagoons or channels, and is also drifted over the shallow seas outside of the reefs by currents. Throughout the long series of the geological formations produced by aqueous deposition, back to those of the Silurian era, the agency of the marine polyps is traced in the production of limestones. At one period, in the lower Devonians, there were true coral reefs of great extent over the Mississippi basin, and along the northern borders of New England; and the corals of those old reefs may be now seen making the old reef rock at the falls on the Ohio near Louisville, and near Lake Memphremagog, in northern Vermont. Unmistakable coral rocks of recent production are met with in the islands of the Pacific and Indian oceans, sometimes hundreds

of feet above the level of the sea. In the tertiary and cretaceous formations ranging along our own coast, corals of various species, as perfect as specimens brought from the East Indies, are occasionally taken from the marl pits, together with multitudes of shells, such as now belong to warmer latitudes. Teeth of sharks and of other fishes are scattered with the shells throughout the rocks of these districts, precisely as they are now left by the fishes whose remains lie entangled among the reefs which were their pastures. Most fossiliferous groups thus contain in their calcareous strata evidences that corals have contributed more or less to their origin. Even limestones that are now crystalline and without a trace of a fossil (owing to alteration through the action of heat and other metamorphic agencies) are in some cases, largely of coral formation. Thus part of the material of the solid marbles quarried from the midst of granitic rocks, and apparently as far removed in their origin as these from the agency of organic bodies, are traced back to the digestive and secretory operations of the coral polyps. By analyses of different varieties of coral, they are found to consist almost solely of carbonate of lime (95 to 98 per cent.). There is a small proportion, usually from 1½ to 4 per cent., of animal matter, and according to Sharples 0·27 to 0·90 per cent. of phosphate of lime. Prof. B. Silliman found fluorine in some corals, and Sharples the "slightest traces of it." Forchhammer obtained 2·1 per cent. of magnesia from the precious coral of the Mediterranean, and 6·36 per cent. from an Isis. The soluble salts of sodium, which form the greater part of the solid matters contained in sea water, are rejected by the polyps, and only those materials are made use of which are best fitted for producing the most substantial structures. By their removal, the waters of the ocean are kept of uniform composition. The soluble impurities poured into them by every river, but for some such provision, would accumulate, as the fresh water alone is carried off by evaporation. The coral insects and marine shells are the agents appointed to keep pure the waters of the great deep, to take up and store away the excess of the lime salts, and preserve the balance in this department of nature, as the vegetable growth performs a similar office in keeping down the excess of carbonic acid in the atmosphere. The great ocean currents spread all the waters among the coral groves, as the winds convey the air through the forests. The mightiest forces of nature are thus made to administer food to the tiny polyp and the other life of the coral reef.—The coral which is used in jewelry is known as precious coral (*corallum rubrum*). It is mostly obtained in the Mediterranean, the Barbary coast furnishing the dark red, Sardinia the yellow or salmon color, and the coast of Italy the rose-pink; in Europe and in this country the latter is most valued, while in the East the dark red is preferred. Torre del Greco, near Naples, is the residence of many of the coral fishers, and the place from which boats are fitted out for the business. The coral obtained by them is sold to the merchants of Naples, who have it manufactured into various articles of ornament for the European market.

CORAM, Thomas, an English philanthropist, born about 1668, died March 29, 1751. He spent the early part of his life as a sea captain. Having seen in the poorer parts of London many children abandoned and cruelly exposed, he projected the foundling hospital, in which design he labored 17 years, and at last procured a royal charter and a grant of £10,000 from parliament. He was also instrumental in promoting American trade by procuring a bounty on naval stores from the colonies, and by interesting himself in the settlement of Georgia and Nova Scotia. He died while perfecting a scheme for the education of Indian girls. An annuity of £100 was raised for him by subscription in his old age.

CORATO, a town of S. Italy, in the province and 25 m. N. W. of the city of Bari; pop. in 1871, 26,220. It contains a fine collegiate church, several convents, and an orphan asylum, and carries on a considerable trade in olives. It was founded by the Normans in the 11th century.

CORAY, Adamantios, a Greek author, born in Smyrna, in April, 1748, died in Paris, April 6, 1833. Educated a merchant, he was also an ardent student of the ancient and modern languages, in which he became deeply learned. While yet a young man he was intrusted with the care of a branch of his father's mercantile house in Holland, and remained in Amsterdam six years, allowing himself no recreation from business, except two lessons a week in mathematics and philosophy. He returned to Smyrna in 1779, a few days after a fire had destroyed the warehouses and residence of his father. He then renounced commerce, and for six years devoted himself to the study of medicine at Montpellier in France. His parents dying in poverty a year after he left Smyrna, he was obliged to support himself by translating English and German medical works into French. He went to Paris in May, 1788, and resolving to aid in the liberation and regeneration of his country, he wrote a number of political tracts, and published in a series called the "Greek Library" a variety of ancient Greek works, with notes and translations, calculated to excite the patriotism of his countrymen; among the most celebrated of which were the editions of the Ethics and Politics of Aristotle. He was employed in a translation of the geography of Strabo by Napoleon, who conferred on him a pension.

CORBAN, a Hebrew word occurring in the Greek of the New Testament (Mark vii. 11), where it is translated a "gift." It designates an oblation to God, and has reference to a formula of consecration, by using which, under

pretence of dedicating anything as his property to God, a person might prohibit the use of it to his parents or to any party to whom it was thus made corban. Property so dedicated went into the treasury of the temple and the keeping of the Pharisees, who held that when the formula was once spoken, even if in anger, the speaker was relieved of any duty to aid another with what he had so devoted.

CORBAUX, Fanny, an English artist and Biblical scholar, born in 1812. When she was about 15 years of age her father suddenly became reduced to poverty, and, without having received any but the most superficial instructions in drawing, she determined to support herself and him by painting. So severe and well directed were her labors, that in the same year she received two silver medals for water-color drawings, and within the next three years another silver medal and the gold medal of the society of arts. She had been all the time her own instructor. After that she painted small pictures in oil and water colors, but has confined herself chiefly to portraits. She was one of the first to assert the right of women to obtain admission as students to the royal academy. As a Biblical scholar she has written a valuable series of letters on "The Physical Geography of the Exodus," and another entitled "The Rephaim."

CORBEIL, a town of France, in the department of Seine-et-Oise, on both banks of the Seine at its confluence with the Essonne, 17 m. S. by E. of Paris; pop. in 1866, 5,541. It contains many flour mills, an immense granary of seven stories built in 1762 for the supply of Paris, and a fine grain market of iron, built in 1862. There are stone bridges across the Seine and the Essonne. The church of St. Spire, rebuilt in 1437 after a fire, having been first built in 950 by Haymon, first count of Corbeil, contains the tomb of Jacques de Bourgoin, founder of the college of Corbeil; and the little church of St. Jean de l'Île was built by the templars in the 13th century. Just outside the town there is a hospital founded in 1864 by the Messrs. Galignani. Corbeil has manufactures of shawls, cashmeres, printed goods, woollen yarn, earthenware, and plaster.

CORBET, Richard, an English poet and divine, born at Ewell, Surrey, in 1582, died in 1635. He was educated at Westminster school and at Christchurch college, Oxford, of which he became dean in 1620. He was much esteemed for his eccentric wit and generous spirit, was made chaplain to James I., bishop of Oxford in 1629, and of Norwich in 1632. His poems, written early in life, were published after his death under the title of *Poetica Stromata* (1647). A fourth edition, with his life, was published in London in 1809.

CORBOULD. I. Henry, an English artist, born in London, Aug. 13, 1787, died there, Dec. 9, 1844. He was considered one of the most accomplished draughtsmen of his time, and devoted nearly his whole life to drawing from ancient marbles in the possession of various private collectors, and of the British museum. The collection in the latter institution occupied him nearly 30 years, and his drawings were in the course of publication at the time of his death. He was also a frequent and graceful designer for illustrated books. **II. Edward Henry,** an English painter, son of the preceding, born in London, Dec. 5, 1815. He early manifested a taste for art, and between 1835 and 1837 gained gold medals awarded by the society of arts for his "Fall of Phaëthon from the Chariot of the Sun," "St. George and the Dragon," and "Chariot Race between Atrides and Antilochus." Soon afterward he was elected a member of the new society of painters in water colors. Some of his earliest pieces, exhibited at the royal academy and elsewhere, illustrated subjects from Spenser's "Faerie Queen." His first large picture was "The Canterbury Pilgrims at the Tabard Inn in the Borough of Southwark," which was followed by a number illustrating scenes from English history and kindred subjects. In 1842 his "Woman taken in Adultery" was purchased by the prince consort for Queen Victoria. In 1851 he was appointed teacher of drawing to the royal family. He paints exclusively in water colors, confining himself chiefly to figure subjects, and is noted for spirited composition and a peculiar richness of coloring. His picture from Tennyson's "Morte d'Arthur" is esteemed his best work. He excels in pageants and chivalric subjects. He has also painted scenes from the opera and the drama, including portraits of Garcia, Mario, Grisi, and Charles Kean.

CORCYRA. See Corfu.

CORDARA, Giulio Cesare, an Italian Jesuit, born in Alessandria in 1704, died there in 1790. He was the second son of the count of Calamandrana, entered the society of Jesus in his 14th year, and, after teaching in the colleges of Viterbo, Fermo, and Ancona, was appointed professor in the Roman college. In 1742 he was chosen historiographer of his order, and in 1750 published a continuation of the history of the society of Jesus by Orlandini, Sacchini, and Jouvency (2 vols. fol.). On the suppression of the Jesuits he retired to his native city, where he continued to cultivate poetry and letters. His works, which also comprise a history of the foundation of Nice, of the Germanic and Hungarian colleges in Rome, and of Prince Charles Edward's expedition to Scotland, were published in Venice in 1805, in 4 vols. 4to.

CORDAY D'ARMANS, Mariane Charlotte de, a French heroine, born at St. Saturnin des Lignerets, in the present department of Orne, July 28, 1768, guillotined in Paris, July 17, 1793. Her father was a poor Norman nobleman of literary tastes, and author of works of a republican tendency. Her mother died during her early youth; her two brothers entered the army; one of her sisters died young, and she and her remaining sister were placed by

their father in a convent at Caen. Among the visitors was M. de Belzunce, a young cavalry officer, between whom and Charlotte a tender feeling sprung up. She was intellectual, vehement, and enthusiastic; she was a republican in feeling, and entertained the most exalted ideas of the duties of patriotism. Her lover having been assassinated by the mob of Caen, she vowed revenge against those whom she conceived to have instigated the murder. After the revolution had closed the doors of the convent, she removed to the house of her aunt, an old royalist lady. Many Girondists had fled to Caen; among them was Barbaroux, and Charlotte found a pretext for calling upon him. The conversation chiefly turned upon the tragic fate of the Girondists, upon Mme. Roland, and upon Marat, for whom she had long felt a horror. On the morning of July 9, 1793, she suddenly left the house of her aunt, on pretext of a journey to England. On the 11th she was in Paris, where she took a room not far from Marat's dwelling. For a time her mind was undecided as to whether Marat or Robespierre should fall, when Marat's journal, *L'Ami du Peuple*, in which he said that 200,000 more heads must be lopped off in order to secure the success of the revolution, fixed her determination. She addressed a letter to Marat soliciting an audience, in order to acquaint him with the plots of the Girondists at Caen. No answer came, and on the morning of July 13, after having purchased a knife in the Palais Royal, she called upon Marat, who then resided in a gloomy house in the rue des Cordelières. She was refused admittance. She wrote a second note and called again at half-past 7 the same evening, when with some difficulty she gained admittance to Marat, who was just taking a bath. He listened to her report of the proceedings of the Girondists, and taking down their names, remarked with a smile, "Within a week they will all go to the guillotine." Drawing the knife which she had concealed in her bosom, she plunged it to the hilt in Marat's heart. He gave a loud cry and sank back dead. She was immediately arrested and transferred to the nearest prison, the Abbaye. Her trial took place on the morning of July 17; she was sentenced to death, and guillotined the evening of the same day. Her courage did not forsake her for a moment. She declared that her project had been formed since May 31, when the Robespierre party had pronounced the doom of the Girondists, and that she had killed one man in order to save a hundred thousand. Her remarkable beauty and her lofty bearing on her way to the guillotine sent a thrill even through the hearts of her executioners. A young German enthusiast, Adam Lux, a deputy from the city of Mentz, at the execution cried out, "She is greater than Brutus." He wrote a pamphlet suggesting that a statue with such an inscription should be erected to her memory, for which he was arrested and guillotined. André Chénier, who paid a glowing poetical homage to her heroism, shared the same fate a year later.

CORDELIERS. **I.** A name given in France to the friars of the Franciscan order, in allusion to the cord tied with three knots which they wear as a girdle. The title is said to have originated in the time of the crusades, when St. Louis, struck by their prowess in battle with the infidels, asked their name, and was told that they were *cordeliez*, or "tied with cords." At one time there were in France 224 male and 123 female convents of this order. (See FRANCISCANS.) **II.** A political club during the first French revolution, which received the name from its members meeting in the chapel of the old convent of the Franciscan friars situated near the rue de l'École de Médecine and the rue de l'Observance, in the centre of the quarter of Paris known as the Cordeliers' district. It became the focus of the wildest agitators, and was constantly quarrelling with the Jacobin club. Marat and Danton were its ruling spirits. At the time the club was in its zenith, Camille Desmoulins edited a popular journal in connection with it under the name of *Le vieux Cordelier*. The club was closed by the law of 6th Fructidor, or Aug. 23, 1795, which dissolved all the political clubs of France.

CORDILLERA, a Spanish word meaning a mountain chain or ridge. It is commonly applied to the whole or a portion of the chain of the Andes, as *la Cordillera de los Andes; la Cordillera de la Costa*, the chain which runs near the Pacific coast; and *la Cordillera Real*, the northern prolongation in Venezuela and Colombia of the main interior chain. Some authorities consider the Cordilleras of Central America and those extending northward near the Pacific to the frigid zone as the continuation of the Andes, forming with them one range from the Antarctic to the Arctic ocean, and that hence they should be described under one common name. But the break at the isthmus of Panama, the only one in the chain between this point and the straits of Magellan, the diverging course of the ranges of the Andes as they approach the northern limits of South America, and the fact that the comparatively low elevation of the isthmus can at the most be called the continuation of the inferior Cordillera of the coast, taking on the other side of the break an entirely new course, as it sweeps round to N. W.—these lead others to the conclusion that the mountain ranges of North and South America are too distinct from each other to be classed as one range, notwithstanding they are connected by the continuation throughout their extent of the same great geological formations. The South American Cordilleras have been treated under the title ANDES; the ranges through Central America and Mexico may be described under the present head; while to their extension further north the name ROCKY MOUNTAINS is given.—Upon the isthmus the Cordilleras present the lowest and narrowest

barrier between the two oceans. The distance across varies from 30 to 70 m. The railroad constructed from Aspinwall on the Atlantic side to Panama on the Pacific coast traverses the isthmus in a length of 48 m., ascending to the summit level only 300 ft. It is said that the summit level between Port Escoces on the Atlantic and the mouth of the Savanna in the harbor of Darien is only 150 ft. above the sea, and this point is suggested as the most favorable for a ship canal between the two oceans. Yet the mountains, as seen from the sea, present the appearance of continuous ranges of great height, the overlapping of the ridges concealing the gaps, the valleys and low lands, and the thickly wooded plains that lie between the mountains. The unhealthiness of this portion, the incessant rains that fall during a considerable part of the year, the almost impenetrable nature of its forests, and the inhospitable disposition of the Indians that occupy the territory, have prevented its resources from being developed. These ridges present steep slopes toward the Pacific; on the Atlantic side they fall away more gently. The San Juan river finds its way through them from Lake Nicaragua to the Atlantic, the main range, called the Alto Grande, continuing to the N. E. of this lake and of the adjacent smaller lake, Managua. On the other side a straight and narrow mountainous belt separates these lakes from the Pacific, which belt is so unbroken that, though the waters of the lakes and the ocean approach within 12 m. of each other, and a stage road passes across from Rivas to San Juan del Sur, yet no favorable route appears to exist for the construction of a ship canal, even if the rapids of the San Juan in its passage through the Cordilleras were so improved as to form a part of the interoceanic communication. Along this western range occur several volcanoes and many extinct craters and beds of lava, though the real volcanic belt lies a little further east, passing through the western portion of the two lakes. The central basin between the two outer mountain ranges, including the two lakes, and extending about 300 m. in length by about 150 in width, comprises the fine state of Nicaragua, a country presenting the greatest diversity of beautiful scenery. The rugged mountains on each side are the frames in which are included the broad fertile plains and the large lakes, one of which extends in a parallel direction with the mountains a distance of about 100 m. From its surface and on its shore huge volcanoes rise abruptly to the height of several thousand feet; others appear ranged along the same line, disturbing the smooth contour of the vast plains, above which they stand dark and gloomy, their sides rent with the deep volcanic fissures and black with their covering of ancient lavas. The shores of the lakes are covered with the dense vegetation of the tropics, while the broad slopes of the Alto Grande overlooking them are the open grazing lands for countless herds of cattle. Beyond these, along the summits of the great range, and upon the sources of the streams which flow into the Atlantic, is the mineral region of Chontales, Matagalpa, and Segovia, extending further northward into Honduras. The geological formations of the western portion of the basin appear to be almost wholly of a volcanic character, as basaltic rocks and lava, with limestone and a calcareous breccia formed in great part of volcanic products. The volcanoes still emit smoke and sometimes flame from their summits, but streams of lava are rarely known to flow from them. Some of the larger, as that of Momobacho (about 5,000 ft. high) on Lake Nicaragua, a few miles S. of the city of Granada, are regarded as extinct. The volcanic cone of Ometepec, upon an island in the same lake, is very regularly shaped, and, like the neighboring summit of Madeira, rises to a greater height than Momobacho. The volcanoes El Viejo and Momotombo, N. W. of Lake Managua, are about 6,000 ft. high. The climate of this portion of the Cordilleras is salubrious and of moderate temperature, cooled by the trade winds after these have shed a considerable portion of the moisture they come charged with from the Atlantic upon the easternmost ridges of the range. The rains are therefore not excessive even during the rainy season, which extends from May to November. The thermometer during this season rarely sinks by night so low as 70° upon the plains, or rises in the day to 90°. In the dry season the temperature is somewhat lower, and the nights are cool, especially upon the mountains.

—Through Honduras, San Salvador, and Guatemala the Cordilleras continue with little variation of character. On the east they send out spurs toward the Atlantic, and the inferior volcanic range still skirts the Pacific. Five volcanoes are enumerated in San Salvador, the most active of which is Yzalco, and the two highest, San Vicente and San Salvador, are each estimated to rise to an elevation of about 7,500 ft. In Guatemala six volcanoes are in activity, viz.: Pacaya, Fuego, Agua (which pours forth torrents of water), estimated to be about 14,000 ft. high, Atitlan, 12,500 ft., Sapotitlan and Amilpas, 13,000 ft. Earthquakes are frequent throughout this region. Upon the main range of the mountains, in the department of Tegucigalpa in Honduras, at the source of the Patuca or Patook, which flows into the Atlantic, it is stated that 40 silver mines are found within a circuit of 30 miles radius; but from want of enterprise in the inhabitants they are worked to little advantage. Near the Pacific coast copper ores are found abundantly, but they too are neglected. They are also met with in the Lepaguare valley in the department of Olancho, and were formerly worked to supply the mint at Tegucigalpa, the ores being carried eight days' journey upon the backs of mules. These regions produce in great abundance valuable mahogany, rosewood, red cedar, boxwood, India rubber, vanilla, cochineal, sarsaparilla,

&c., large quantities of most of which are floated down the Patuca to the Atlantic coast. The temperature of the interior region is never excessive; the thermometer during the dry season from November to February seldom rises above 80° F. at noon, or falls below 55° in the morning. During the summer wet months at Jutecalpa, considerably to the eastward of the main range and below its summits, the nights are said to be always cool, and the extreme temperature of the day is below 95°.—Passing from Guatemala into Mexico, the mountain ranges diminish in height. At the isthmus of Tehuantepec one may pass from ocean to ocean over a summit not more than 700 ft. high. The mountains thence to the northern limits of the state spread out in a vast plateau, the height of which along its middle portion is from 6,000 to 8,000 ft. above the sea, and its greatest width near the latitude of the city of Mexico is about 360 m. It extends N. W. at this elevation full 600 m., presenting a smooth surface, mostly unsheltered by the growth of forest trees, though the soil is naturally fertile. Still further N. for 900 m. the plateau is traced at an elevation of from 2,000 to 3,000 ft. On either side one descends from this cool elevated region by successive steps to lower plateaus, each descent bringing the traveller into a region of warmer temperature and of more tropical productions. From the *tierra fria*, or cold region, the first descent is to the *tierra templada*, or temperate tract; the next to the *tierra caliente*, the low lands along the coasts, hot and unhealthy. So steep are the walls of these plateaus, that for a distance of 500 m. only two roads passable by carriages lead from the Atlantic coast into the interior—one passing from Vera Cruz through Jalapa, and the other by Saltillo west of Monterey. On the western side the descent is hardly less precipitous, and to the south the great plateau ends abruptly near the shores of the Pacific. The climate of the plateau, though called cold, is said not to differ in its mean temperature (which is about 62° F.) from that of the central parts of Italy. There are some still more elevated tracts, as the valley of Toluca, about 8,500 ft. above the sea, where the thermometer during a great part of the day rarely rises beyond 45° F. The volcanic mountains, which are still met with along the chain as far as lat. 24° N., rise from the great plateau in stupendous masses, and penetrate with their lofty peaks the limits of perpetual snow. Their range is not, as in the more southern states, near to and parallel with the Pacific coast, but a line of them appears to cross that of the great mountain chain in an E. and W. direction, passing about 16 m. S. of the city of Mexico. The most western of them, Colima, stands alone upon the plain of the same name, situated between the plateau and the Pacific. Its height is about 12,000 ft. Smoke and ashes are frequently thrown from its crater, and an eruption began in 1869 in which vast quantities of pumice stone were ejected. Jorullo, upon the western slope of the plateau, 70 m. from the Pacific, is described by Humboldt as suddenly appearing above the surface in the night of Sept. 28 and 29, 1759, after a succession of earthquakes, accompanied by constant subterranean noises, which had continued for about three months. A tract covering several square miles rose above the plain to the height of 524 ft. Flames burst forth from all parts of this area, and burning rocks were thrown with vast clouds of ashes into the air, the softened surface of the earth rising and falling like the waves of the sea. Rivers of water flowing into the chasms caused eruptions of mud to issue from thousands of little cones that appeared upon the surface. In the midst six mountain masses were suddenly formed along a chasm ranging from N. N. E. to S. S. W. The principal one of them is the great volcano of Jorullo. Its height above the sea is 4,265 ft.; that of the plain upon which it stands is 2,890 ft. Its great eruptions continued till the month of February, 1760; subsequently they became less frequent. A wall of basalt forms the boundary of the upheaved tract, which in most places, especially on the western side, is too steep to be ascended. The celebrated valley of Mexico, nearly 7,500 ft. above the sea, and covering an area of 18 leagues in length by 12½ in breadth, is encircled by groups of mountains, among which are the famous volcanic peaks of Popocatepetl, Iztaccihuatl, and Toluca. The first rises to the height of 17,720 ft. above the sea, and 500 ft. above the termination of vegetation. Its crater is 3 m. in circumference and 1,000 ft. deep, and is in continual eruption. The second is an extinct volcano 15,705 ft. high. A chain of small volcanoes connects these with each other, and with the other volcanoes further east. The Cofre de Perote lies between Popocatepetl and the fiery Orizaba, or Citlaltepetl, "the mountain of the star," so named for the fires that ever issue from its snow-enveloped summit, dispelling as by the light of a brilliant constellation the darkness of the night through the surrounding country. Orizaba, as measured by Ferrer in 1796, is 17,879 ft. high; but later calculations by Humboldt and others reduce these figures somewhat. It is generally thought that Popocatepetl is the higher of the two, and consequently the highest peak in Mexico. Below the plateau, in the region of low hills near the gulf of Mexico, is Tuxtla, the last of the volcanoes upon this line, a few miles west of Vera Cruz. It was in operation in 1793, when the ashes thrown from its crater were carried as far as Perote, a distance of 57 leagues. The great Mexican plateau, though a considerable portion of it is as level apparently as the ocean itself, is cleft by fissures called *barrancas*, two or three miles in length, and often 1,000 ft. deep. A brook or small river flows at the bottom, the banks of which are the precipitous and rugged walls of the chasm.

Some mountain ranges besides those of the volcanoes rise above the plain, as one bordering it on the eastern side, and the Sierra Madre, which, commencing at lat. 21° N., and extending 60 m. further north, separates it for this distance into two portions. Other ridges here unite with it, spreading out into the mountainous district of Zacatecas, celebrated for its rich silver mines. Beyond this the Sierra Madre forms a belt of full 100 m. in breadth of parallel ridges and valleys extending to New Mexico, where it unites in lat. 33° N. with the southern portion of the Rocky mountains. Between the Rio Colorado and the Rio Grande del Norte, some of the summits of the Sierra Madre exceed 10,000 ft. in height above the sea, and are continually covered with snow. The geological structure of the Cordillera of Mexico is that of granitic and volcanic rocks, together with the micaceous, talcose, and clay slates, which form a considerable portion of the range, especially in the mining districts. So many of the rich silver mines of Mexico are found in porphyry, that its presence is regarded as particularly favorable for the existence of this metal. It is also found, however, in the metamorphic limestones, and in those called by Humboldt the Alpine and the Jura. In no part of the range of the Cordilleras in North and South America has the production of this metal been so great as in Mexico. It was estimated by Humboldt to be ten times as great as that furnished by all Europe, and two thirds of the whole production of the globe. The vegetation of the elevated country varies with its height. On the high plains the forests destroyed by the early Spanish settlers have never been renewed, though there are still to be seen fine open groves of gigantic oaks and pines, clear of undergrowth. The plains as seen about the city of Mexico are not always fertile, but are covered in many places with saline incrustations.



Prison of the Inquisition.

CORDOVA (Span. *Córdoba*). **I.** A S. province of Spain, in Andalusia, bounded N. W. by Badajoz, N. by Ciudad Real, E. by Jaen, S. E. by Granada, S. by Malaga, and S. W. and W. by Seville; area, 5,190 sq. m.; pop. in 1867, 379,464 (estimated). The Sierra de los Pedroches, a range of the Sierra Morena, crosses from E. to W. the part of the province N. of the Guadalquivir, which is generally mountainous. The Guadalquivir flows from E. N. E. to W. S. W. across the province, receiving from the north the Rio de las Yeguas, Cuzna, Guadiato, and Bembezar, and from the south the Guadajoz. From the Guadalquivir southward stretches a fertile plain, the Campiña, to where the Sierra de Priego occupies a small tract of country in the extreme south. The province is somewhat deficient in water, but produces grain enough for its own use, and great quantities of wine, oil, hemp, flax, saffron, honey, and wax. Fine mules and horses are bred, and bees, game, fish, cattle, and swine are plentiful. There are numerous mines of coal, copper, iron, silver, and lead, and manufactures of silk, woollens, and pottery. The principal towns are Cordova, Baena, Cabra, Castro del Rio, Fuente Ovejuna, Lucena, Montilla, Montoro, and Rambla. **II.** A city (anc. *Corduba*), capital of the province, in lat. 37° 52′ 15″ N., lon. 4° 49′ 37″ W., 70 m. N. E. of Seville, situated in a beautiful plain on the right bank of the Guadalquivir, here crossed by a Moorish bridge of 16 arches; pop. in 1867, 41,976. It is renowned for its picturesque buildings, its beautiful location on the southern declivity of the Sierra de Cordova, and its unsurpassed cathedral, once a Moorish mosque. The town itself resembles eastern towns in its inconveniently narrow streets, and its want of ventilation and cleanliness. It is enclosed by high walls flanked by square, round, and octagonal towers, built by the Moors on the foundations of the old Roman line of circumvallation. There are several churches and religious houses, a bishop's palace, a theatre, a museum, a lyceum, a *plaza de toros*, and several hospitals. The great mosque was founded by Abderrahman I., A. D. 786. It was an edifice of marvellous beauty, with a light, elegant roof, springing from clusters of slender pillars, and was lighted with 4,000 silver lamps. There were originally 1,200 pillars, but 400 have been taken away to make an open space suitable for Christian worship.

Cordova was once celebrated for its manufactures of leather, but this industry was transferred by the Moors to Morocco. Its silversmiths and filigree workers are still cele-



The Great Mosque (now Cathedral).

brated.—Corduba was the birthplace of the two Senecas and of Lucan the poet. It sided with the sons of Pompey, and after the battle of Munda it was taken by Cæsar, when 23,000 of its inhabitants are said to have been put to death. Its foundation is attributed to Marcellus, the commander in the Celtiberian war (152 B. C.), and being peopled by poor patricians of Rome, it was hence called *Colonia Patricia*. Under the Goths it was called the "holy and learned." Osius, the friend of St. Athanasius and the counsellor of Constantine, was its bishop from the end of the 3d to the middle of the 4th century. Under the Moors Cordova became a great centre of learning and power; produced Averroes, Maimonides, and other famous scholars; rose to be the capital of the Moorish empire of Spain, and the seat of the caliphate from 756 to 1031, eclipsing Bagdad by its splendor, and containing in the 10th century nearly 1,000,000 inhabitants, 300 mosques, and 900 baths. After the overthrow of the caliphate, Cordova passed into the hands of various rulers. In 1236 it was conquered and almost wholly destroyed by Ferdinand III. of Castile, a blow from which it never recovered. In 1808 it was taken and pillaged by the French under Dupont.

CORDOVA. **I.** A central province of the Argentine Republic, lying between lat. 29° and 34° 15′ S., and lon. 61° and 66° 15′ W., bounded S. by the Pampas; area, 60,000 sq. m.; pop. in 1869, 208,771. The E. and S. parts are barren and almost uninhabited, but the remainder is generally fertile. Near the W. border is the mountain range called the Sierra de Cordova, running N. W. and S. E. It separates into two branches and ramifies through the central parts of the province, but has no very lofty peaks, the highest, La Cuesta, rising about 2,500 ft. above the plain. Numerous rivers, the principal of which are the Primero, Segundo, Tercero, Cuarto, and Quinto, descend from this chain, but the most of them are lost in the sandy plains. Only one, the Tercero, finds its way into the Paraná, under the name of Carcarañia. The sierras abound in copper ore, but little has been done to develop the mines. Near the mountains the country is covered with dense forests, mostly of trees of the mimosa variety. The valleys are fertile, but the people are engaged generally in cattle and sheep raising, and pay little attention to agriculture. The plains, irrigated by the mountain streams, furnish abundant pasturage, and are frequented by vast herds of the guanaco. Wheat and the sugar cane grow to perfection, but scarcely enough is raised for home consumption. Hides and wool, the latter of very superior quality, are almost the only exports. Besides Cordova, the capital, there are no towns of any consequence. **II.** The capital of the province, situated on the right bank of the river Primero, in lat. 31° 24′ S., lon. 64° 9′ W., 375 m. N. W. of Buenos Ayres, on a plain 1,240 ft. above the level of the Paraná at Rosario; pop. in 1869, 28,523. It is laid out in straight, narrow streets, intersecting at right angles, forming squares of 150 yards each. The better houses are of stone, one story in height, and built around paved courts into which all the rooms open. The Alameda, a square of about 150 yards, has a miniature lake and fine trees. The principal public buildings are the cathedral, a handsome structure in the renaissance style, several other churches, three monasteries, and a nunnery; the university, occupying the buildings of the old Jesuit college, which was for more than a century the principal seat of learning in La Plata; the Argentine national observatory, not yet (1873) entirely completed, though in successful operation, under the charge of Mr. B. A. Gould; the *cabildo* or government house, an orphan asylum, and an infirmary. The city, once the ecclesiastical metropolis of South America, still retains much of its former character, and the clergy and their connections form the most influential part of society. Its trade is important, as all the traffic of the W. and N. W. provinces passes through it to the east. The exports are chiefly hides and wool, and the imports manufactured goods. The city was founded in 1573 by Don Luis de Cabrera, with the design of opening a route from Peru to the Paraná. It is now connected with the latter at Rosario by a railway, about 215 m. long.

CORDOVA, a city of Mexico, in the state and 57 m. W. S. W. of the city of Vera Cruz, at the foot of the volcano of Orizaba; pop. about 6,500. It is regularly built, with broad well paved streets, and a fine square in the centre, having Gothic arcades on three sides, and a fountain in the middle. The cathedral, a very handsome edifice, with a richly decorated in-

terior, occupies the fourth side. Its houses are mostly built of stone. The soil of the surrounding country is rich, and the climate being moist and warm, it is very productive. Tobacco, coffee, and sugar are raised and exported in large quantities, and cotton, woollen goods, and leather are manufactured.

CORDOVA, Fernando Fernandez de, a Spanish general, born in Madrid in 1792. He entered the military service in 1810, and was rapidly promoted during the war with Napoleon. In 1841 he was implicated with Gen. Concha in the movement instigated by O'Donnell against Espartero. In 1847 he was a short time minister of war, and was appointed inspector general of infantry. Two years afterward he was sent to Gaeta in Italy at the head of an army to aid in the restoration of the pope. On March 8, 1850, he was appointed captain general of New Castile, in the following year of Cuba, and in 1853 general-in-chief of the cavalry. Immediately after the outbreak of the revolution of 1854, he was called upon by Queen Isabella to form a new cabinet. This he declined, but he ordered his soldiers to fire upon the insurgents, and when the latter proved victorious he fled to France. In 1856 he returned to Spain, and in 1864 was made minister of war in the cabinet of Narvaez.

CORDOVA, Francisco Fernandez de, a Spanish navigator, born in the latter part of the 15th century, died in Cuba in 1518. He commanded a small expedition which sailed from Havana in 1517, discovered Yucatan, where he had several encounters with the natives, and touched at Florida on his return. His report led to the expedition of Juan de Grijalva, who received the credit of the discovery.

CORDOVA, Gonsalvo de. See GONSALVO DE CORDOVA.

COREA, a kingdom on the E. coast of Asia, bounded N. by Mantchooria, N. E. by the Russian Amoor country, E. by the sea of Japan, S. by the strait of Corea, and W. by the Yellow sea and the Chinese province of Liaotung, and lying between lat. 34° 25′ and 43° N., and lon. 124° and 130° 30′ E.; area, 90,000 sq. m. The population has been variously estimated from 8,000,000 to 20,000,000. No accounts of the geography or constitution of the Corean kingdom are in existence, and only the barest notion of the internal configuration of the country has been arrived at. It comprises a peninsula 400 m. long and 140 m. wide, most of the adjacent islands, especially numerous on the W. coast, and a part of the main continent. Its length from N. to S. is 660 m. It is separated from Mantchooria by the Shangpeshan mountains, and the Chimtai range follows the E. coast along its whole extent. Nearly all the principal rivers run W. down the larger watershed which slopes from the Chimtai to the Yellow sea. The largest is the Yalu in the northwest, which is deep and rapid, and navigable for large ships 22 miles. South of this are the Tatong and the Han. On other watersheds are the Falu, which flows from the Chimtai into the strait of Corea, and the Tumen, a large river in the northeast which flows into the sea of Japan. The coast, which is generally high and rocky, is particularly abrupt on the E. side. On this side there are few islands except in lat. 39° 45′ N., in Broughton's bay. In the strait of Corea there are many islands, and between lat. 34° and 35° N., on the W. side, are the Amherst isles and the Corean archipelago. These coast islands are seldom more than three or four miles long, are rocky and high, but generally inhabited. The island of Quelpaert, 60 m. S. of the peninsula, is about 60 m. in circumference, and on it is Mt. Auckland, 6,558 ft. high. The climate is cold, especially in the north, where the Tumen is frozen for six months in the year, and barley is the only grain which can be raised. In the southwest, where the climate is more temperate, the soil is more fertile than elsewhere. The country produces wheat, rice, millet, cotton, hemp, ginseng, and fruits. Tobacco and cotton are cultivated to some extent. The orange, citron, hazlenut, pear, chestnut, peach, mulberry, and wild grape are common. Cattle, a breed of diminutive horses, hogs, and many domestic animals common to Europe, are raised. The keeping of sheep, however, is said to be prohibited by the government. In the forests of the coast and mountainous districts of the north bears, wildcats, panthers, deer, and the sable and other fur-bearing animals are found. The royal tiger is a native of the country, and has a longer and closer fur than in Bengal. Gold, silver, iron, and salt are said to abound, but mining is restricted by the government to its own requirements. Coal is also said to exist.—The inhabitants are of the Mongolian race, of larger size than the Chinese, resembling the Japanese, but with features more prominently Mongolian



Coreans.

in type. In dress, architecture, and social life they much resemble the Chinese, with the exception of being the only people in eastern Asia with whom the ancient caste distinctions are still rigidly in force. They do not cut off their hair, nor are their women kept under such restraint as in China. The language differs widely from both Chinese and Japanese, but it is like the latter in its polysyllabic form, and its alphabet of 27 letters. The higher classes are well educated, use the Chinese characters in writing, and are followers of Confucius. The mass of the people are Buddhists. Roman Catholic missionaries have been laboring in Corea since 1632, and in 1857 there were 15,200 converts. On account of the strict laws against them, the missionaries work in secret. The Coreans oppose not only the introduction of Christianity, but of all foreign civilization and commerce. The only intercourse allowed with China is officially confined to two points, viz., Peking, which is annually visited by an envoy accompanied by a few privileged traders, and the "gate town" near the city of Funghwang in Liaotung, on the frontier dividing the two countries, where a fair is periodically held. But the Chinese manage secretly to carry on trade at the islands on the coasts of Corea. The principal manufactures are silk, cotton, cotton paper, grass cloth, rice paper, arms, and horsehair caps; which articles, with ginseng, skins, gold, silver, iron, rice, and oil, are the chief exports. The principal trade is with Japan, from which are imported pepper, aromatic woods, horns, and European and Japanese manufactured goods.—The government is despotic, and as regards the mass of the people is unrestrained; but powerful parties among the nobles appear to exercise a certain control over the king's actions, and decide questions of disputed succession, which frequently arise. Absolute power over the lives and property of the people seems to be in the hands of even the lowest officials, and frightful flagellations are often inflicted by their order on persons guilty only of trifling offences. The king pays tribute to China and Japan. The ministry is divided into five departments, and the country into eight *taos* or administrative districts. Over each tao is a governor responsible to the king. These taos are subdivided into 41 *koons*, with 33 towns of the first class, 38 of the second, and 70 of the third. Kienghi-tao, or Hanching, or Wangking as the Chinese call it, literally royal capital (called by the French Séoul), the capital, is at a short distance inland on the river Han. The other principal towns are Kieng, Tsien, Piengyang on the Tatong river, and Hienhing on Broughton's bay. The whole population is liable to military service, but no standing army is maintained, unless it be a guard to the king. They know accordingly nothing of military discipline and tactics. The people take turns in doing duty as armed police, and while serving in that capacity wear a rounded top to the crown of their hat. They have spears, bows, and a kind of matchlocks, which, in spite of their primitive description, exhibit a very workmanlike finish. The guards are furnished with an armor of chain mail, which was found in the recent encounter with the United States naval force to be proof against sword cuts and musket balls, but not against rifle shots; it was however so heavy, a single suit with helmet weighing about 20 pounds, that the troops were rendered almost incapable of locomotion. The Coreans live in the most frugal manner, and articles of daily necessity to the Chinese and Japanese are unknown among them. They do not drink tea, and their most palatable beverage is the water in which rice or millet has been boiled. The wealthy indulge in an infusion of ginseng, and in a kind of rough spirit distilled from various grains. The universal material for clothing is a coarse white fabric of cotton or hemp. The lower classes wear in summer jackets and wide short trousers; the higher classes wear over a vest and trousers a long gown with buttons in front, and sometimes dyed of a blue color. Every Corean carries a belt with a tobacco pouch and a pipe, a long stem of bamboo. Officials wear upon their hats the figures of different birds or animals, and a variety of small balls of amber or silver, securing the chin strap above the ear. Military officials denote their rank by an outer jacket of colored silks.—Corea was known from a very early period to the Chinese, who claim that it was civilized by their sovereign Khil-su in 1120 B. C. In the 13th century the Mongol conquerors incorporated the greater part of Corea with the Chinese empire; but in the 14th century the founder of the Ming dynasty acknowledged the claimant of the Corean throne, and conferred upon him the title of feudatory king, or Kao-li Wang, which designation is the origin of our word Corea (Fr. *Corée*), obtained from the Japanese, who represent the Chinese sound as Ku-rai. The Coreans were conquered by the Japanese in 1592, but in 1598, with the aid of the Chinese, compelled their conquerors to abandon the country. In 1866 a French expedition escaladed Kanghoa, a town on the Han, 40 m. from its mouth, and endeavored to obtain satisfaction from the Corean government for the murder of two Roman Catholic bishops and seven priests who had been put to death by order of the ministry; but the town was found to be wholly deserted. The Coreans sent to the French some professions of desiring to negotiate with them, but were only bent on gaining time for the purpose of overwhelming the handful of invaders. The French found themselves one day confronted by about 500 soldiers, who discharged on them a heavy fire, wounding 32 men and 3 officers. Admiral Roze had to embark his forces, and returning to Chefoo found that the French government would not support this hasty action, inaugurated by the ambassador at Peking. In the

same year an American trading ship, the General Sherman, ascended the Piengyang river, and was destroyed with all on board, in obedience to orders from the regent, while lying dry on the shore, having departed from the proper channel during a period of floods. In 1871 a United States squadron under Admiral Rodgers sailed to Corea from Nagasaki, advanced up the river Han, and began to survey the river and forts in the direction of the capital. While thus occupied they were fired upon from the forts, and as a punishment for this action the Americans on June 11 captured and destroyed several of their river fortifications. Being unable however to open negotiations with the king, Admiral Rodgers released the prisoners whom he had taken. (See supplement.)

CORENTYN, a river of South America, which rises in the Sierra Acaray, flows generally N., forming for its whole length the dividing line between British and Dutch Guiana, and enters the Atlantic by an estuary about 25 m. wide at its mouth. Sir R. Schomburgk ascended it in 1836 as far as lat. 4° 21′ 30″ N., lon. 57° 35′ 30″ W., 150 m. from its mouth, where is a series of cataracts 900 yards across, beyond which it is only navigated by small vessels.

CORFU. I. A nomarchy of the kingdom of Greece, comprising the islands of Corfu, Paxo, Leucadia, and several smaller islands; area, 427 sq. m.; pop. in 1870, 96,940. **II.** One of the Ionian islands (anc. *Corcyra*), lying between lat. 39° 21′ and 39° 51′ N., and lon. 19° 36′ and 20° 8′ E., off the S. part of the coast of Albania, from which it is separated by an irregular channel from 1 to 20 m. in width; length from N. W. to S. E., 40 m.; greatest breadth, 20 m.; area, 227 sq. m.; pop. in 1871, 75,466. From the north it tapers gradually to its S. extremity, where it ends in Cape Branco. The surface is mountainous, especially in the north, where Mt. Pantocratoras rises to upward of 3,000 ft. The high lands are rugged and bare, but the valleys are very fertile and watered by small streams, which in summer are mostly dry. The climate is mild, the annual range of the thermometer being from 31° to 88°, but with sudden changes. Earthquakes are frequent. The principal products are olive oil, of which the yield in ordinary seasons is about 200,000 barrels, wheat, maize, oats, wine, cotton, flax, oranges, citrons, salt, honey, and wax. The island is divided into three eparchies, Corfu, Oros, and Mesi, and sends 12 members to the legislative assembly of Greece. —Corfu is believed to be the Homeric Scheria, the domain of King Alcinous. About 734 B. C. it was colonized by the Corinthians, and soon after it became a leading maritime power, and a formidable rival of Corinth. In 665 the Corcyrean fleet vanquished one sent against it by the mother city, and this engagement is said by



Corfu—View of Town and Citadel.

Thucydides to be the first naval battle on record. In the Persian wars the Corcyreans, according to Herodotus, betrayed the national cause, and subsequently by calling in the aid of Athens against Corinth kindled the Peloponnesian war, during the progress of which they lost their power and importance through the ruinous struggles of the democratic and oligarchical factions. In 229 B. C. the island fell into the hands of the Romans. It afterward belonged successively to the Eastern empire, the Normans, and the Venetians, and in 1797 was occupied by the French. Two years later it was taken by the Russians and Turks, subsequently united with the other Ionian islands, ceded to France, and captured by the English. With the rest of the Ionian islands it was placed under the protection of Great Britain by the congress of Vienna, but was ceded to Greece in 1864. A Greek garrison took possession on May 28 of that year. **III.** A city, capital of the nomarchy, situated on the E. coast of the island, 5 m. from the coast of Albania, and 212 m. N. W. of Athens; pop. in 1871, 15,452. It consists of two parts, the town and citadel, and has several suburbs. The citadel is built upon a rocky point projecting into the sea, and between it and the town is an es-

planade laid out with avenues and trees, and containing a statue of Count Schulenburg, who defended the city for the Venetians against the Turks in 1716. The citadel contains the barracks, arsenal, hospital, the former residence of the British commissioner, now occupied by the Greek government, and a lighthouse. There are two other fortresses, Fort Neuf, at the west end of the town, and Vido on a small island 1 m. distant. The streets are Italian in style, some having arcades like those of Padua and Bologna, but are irregular, and the houses are small. There are a cathedral, several ancient churches, a university, gymnasium, ecclesiastical seminary, and other schools. The town is supplied with water brought in pipes a distance of 7 m. It is the residence of a Greek archbishop and of a Catholic bishop. It communicates with Otranto in Italy by weekly packets, and with Trieste, Athens, Gibraltar, and England by steamers sailing twice a month; and is connected with Otranto and with Malta by submarine telegraphs. It was the capital of the Ionian republic.

CORIANDER, the fruit of *coriandrum sativum*, an annual umbelliferous plant. It is a native of Italy, but now grows wild in most parts of Europe, and is brought from thence to the United States. The flowers emit a disagreeable odor when bruised, but the fruit has a pleasant fragrance. The fruits, or seeds as they are called, are about an eighth of an inch in diameter and globular in shape. They have an aromatic odor and taste. Their virtue depends on a volatile oil, which is obtained by distillation. Coriander is used in medicine only to correct the action and cover the taste of other drugs, and render them acceptable to the stomach. It may be given in the dose of half a drachm or more. Confectioners use it as a flavoring article.



Coriander.

CORIGLIANO, a town of S. Italy, in the province and 26 m. N. E. of the city of Cosenza, situated near the mouth of a river of the same name; pop. about 13,000. It is poorly built, and the streets are narrow. It contains an aqueduct, five churches, six convents, and a few public buildings. Licorice is made here on a large scale, and there is considerable trade in timber, wine, oranges, lemons, and olives. The best manna of Calabria is produced in the neighborhood. On an eminence overlooking the town is a feudal castle with massive towers and a deep trench. Near by is the site of the ancient city of Sybaris, famed for the voluptuousness of its inhabitants.

CORINTH, a city of ancient Greece, in the Peloponnesus, 48 m. W. of Athens, near the S. W. extremity of the isthmus which connects that peninsula with central Hellas, and separates the Corinthian and Saronic gulfs. It was situated some distance from each coast, at the foot of the Acrocorinthus, and in the centre of the Corinthia, a subject territory extending around the city on every side, but of very limited extent, bounded N. by the Corinthian gulf, N. E. by Megaris, E. by the Saronic gulf, S. by Argolis, and W. by Sicyonia. It was in most parts mountainous and barren; the rocky sides of the Geranean range on the north, the sandy plain of the isthmus, and the rugged Onean hills offered no reward for the labors of the husbandman. The plain N. W. of the city, extending along the coast in the direction of Sicyon, was, however, so fertile and valuable for market gardening, that to possess "what lies between Corinth and Sicyon" became a proverbial expression for great wealth. The most striking natural feature in the Corinthia was the Acrocorinthus, the acropolis of Corinth. This is a rocky isolated hill rising abruptly to the height of 1,886 ft., and is in natural defences the strongest mountain fortress of Europe. At the N. base of this stood the ancient city, which was 5 m. in circumference, though its entire perimeter, enclosing the Acrocorinthus, was upward of 10 m. It had two excellent port towns, viz.: Lechæum on the gulf of Corinth, with which it was connected by means of two parallel walls, and Cenchreæ on the Saronic gulf. Of the topography of the city as it existed in the flourishing periods of Grecian history we are comparatively ignorant. Of the Roman city afterward built upon its ruins we have the account of Pausanias, who visited it in the 2d century of our era. He describes many fine buildings and other monuments of the former magnificence of the city. In the port Lechæum he specifies the temple of Neptune and a brazen statue of that god, and at Cenchreæ a temple of Venus and a stone statue. He describes the agora or forum as surrounded by temples and adorned with columns and statues. In this stood the statues of Bacchus and of Diana of the Ephesians; here too was the temple of Fortune, with its statue of Parian marble; here the temple dedicated to all the gods, adjoining which was a fountain surmounted by a brazen Neptune. Near by stood statues of Apollo

Clarius and of Venus; also two of Mercury and three of Jupiter; while conspicuous among them all, in the very centre of the agora, stood a Minerva of bronze on a pedestal adorned with a beautiful bass-relief of the muses. North of the agora was the Propylæa, surmounted by two gilded cars, the one bearing Phaëthon, the other the sun. Beyond stood a brazen Hercules, near which was the fountain Pirene, celebrated for the salubrity of its waters, which issued from artificial caverns, and were collected in an open marble basin. From this fountain Pindar characterizes Corinth as the "city of Pirene;" and the Delphic oracle, according to Herodotus, speaks of the Corinthians as "those who dwell around the beautiful Pirene." The ascent to the citadel was lined on either side with temples and altars, nine of which are mentioned by Pausanias; while on the summit itself stood the famed temple of Venus, to which goddess the entire Acrocorinthus was especially consecrated. In the days of Corinthian luxury and opulence, this shrine is said to have been attended by 1,000 female slaves, who were kept for the use of strangers visiting the city. On the street which led from the agora to Sicyon stood the temple of Apollo, some traces of which still remain in the N. W. outskirts of the modern town. Corinth is now a small town, whose inhabitants carry on a little trade in dried fruits, wheat, and oil, which they export from a port in the bay of Corinth. A concession was granted in 1873 to Theodore Turbini, a banker of Athens, for cutting a canal through the isthmus of Corinth, to be completed in 1879.

—The earliest rulers of Corinth are represented as Æolians, though a large proportion of the population were no doubt Ionians. The reputed founder of the ancient dynasty was Sisyphus. Under him and his descendants the city is represented to have been very prosperous, and to have grown in wealth and power. Thucydides says that the Dorians, when invading the Peloponnesus, took possession of the hill Solygia, near the Saronic gulf, from which they carried



Corinth.

on war against the Æolian inhabitants of Corinth, till they reduced the city. Aletes, their leader, became the first Dorian king, and the founder of a dynasty, which, continuing through 12 generations, according to tradition, ruled upward of 300 years. During this period Corinth, though thus ruled by Dorian kings, and regarded as a Dorian city, did not by any means conform to all the severe institutions of the Dorians; the commercial connections and importance of the city, the luxury and wealth which a vast foreign trade introduced, exerted a powerful influence upon the fortunes of the state. About 747 B. C. the powerful Dorian family known as the Bacchiadæ succeeded in abolishing royalty, and in electing one of their own number as annual prytanis, or president. Thus was established an oligarchy which lasted till about 657, when it was overthrown by Cypselus. Under the Bacchiads Corinth was already distinguished for commercial enterprise, wealth, and power; and at this time Syracuse and Corcyra were colonized by the Corinthians. It was probably under them also that the first navy of triremes, or war galleys, was launched upon the Grecian waters. Thucydides expressly assures us that the Corinthians were the first of the Greeks to use triremes or galleys with three banks of oars. Cypselus established a new dynasty, which for 74 years ruled Corinth with great energy and skill. The sway of Cypselus was mild and popular; that of Periander, his son and successor, cruel and oppressive. But both unquestionably did much to advance the prosperity of the state. The numerous colonies planted in their time fully attest the growing strength of the city, which was now the first maritime power of Greece, and the centre through which passed the trade between Europe and Asia. Periander patronized letters and art, and welcomed to his court the poet Arion and the philosopher Anacharsis. By some he was classed among the seven sages of Greece. Psammetichus, the last of the despots of Corinth, was deposed by the Spartans. From

this time Corinth became the firm ally of Sparta, and a prominent member of the Peloponnesian confederacy. Its government became a mild and moderate aristocracy, and long enjoyed the greatest internal tranquillity. Its relations to Athens were also friendly, till the growing prosperity and power of the latter state subsequent to the Persian wars began to excite jealousy. Megara was long a subject of contention between them; and when Athens aided Corcyra against the mother city, Corinth exerted all her influence to induce the Peloponnesian confederacy to declare war against her powerful enemy. Thus commenced the Peloponnesian war, throughout which Corinth acted an important part; at first, indeed, she furnished almost the entire Peloponnesian fleet. When the peace of Nicias was concluded in 421 Corinth positively refused to ratify it, and after the defeat of the Athenian fleet at Ægospotamos urged the confederacy to raze Athens to the ground. But it was not long before the Spartans by their progress in power began to excite the jealousy of the other Grecian states; and the Corinthians united with the Bœotians, the Argives, and Athenians in a war against them. This contest, known in history as the Corinthian war, lasted from 394 to 387 B. C., when the peace of Antalcidas restored Corinth to the Lacedæmonian alliance, to which she remained faithful in the Theban war. About 346 Timophanes, attempting to establish tyranny, was killed by his brother Timoleon. After the battle of Chæronea the Macedonians took possession of the city, and stationed a strong garrison in the fortress of the Acrocorinthus; but after the defeat of Philip at Cynoscephalæ, in 197, Corinth, now declared free by the Romans, was again united to the Achæan league, which it originally joined in 243. At the head of the league, Corinth struck the last blow in defence of Greece, and then fell herself before the conquering legions of Rome, in the year 146. Mummius, the Roman consul, on entering the city as victor, put the men to death, and sold the women and children into slavery; he plundered the city of its precious treasures, and consigned it to the flames. From this time Corinth remained desolate for a century, when a colony was planted there by Julius Cæsar, which made it once more a prosperous city, the population rising to about 100,000. It was this Roman city which St. Paul visited a century later, which he made for almost two years his home, and where he founded that important church to which he afterward addressed two epistles. It continued for many years afterward to be the capital of Achaia, but finally fell before the devastating march of Alaric the Goth. In modern times, it was taken in 1458 by Mohammed II., transferred to the Venetians in 1687, and retaken by the Turks in 1715, who held it till 1823, when it passed into the possession of modern Greece. It was almost destroyed by an earthquake, Feb. 21, 1858.—Corinth in the day of Grecian greatness was distinguished more for commerce and the arts than for war. Architecture was early cultivated; sculptors and artists were honored and rewarded. It not only gave name to the most elaborate order of Grecian architecture, but also claimed the honor of having invented the art of painting. The Corinthian vases of terra cotta were among the finest in Greece; and such was their beauty that all the cemeteries of the city were ransacked by the colonists of Julius Cæsar, who sent them to Rome, where they brought enormous prices.

CORINTH, a village and the capital of Alcorn co., Mississippi, in the N. E. corner of the state, near the Tennessee line; pop. in 1870, 1,512, of whom 679 were colored. The village, being at the junction of the Memphis and Charleston and the Mobile and Ohio railroads, was a position of great strategical importance during the civil war, and had been early occupied by the confederates, who constructed there defensive works. It was still further strengthened by Gen. Beauregard after his retreat from the battle of Shiloh (April 6, 7, 1862). Gen. Halleck slowly followed him thither, and began those operations which at the time were designated as "the siege of Corinth." There was some fighting in the vicinity, at Farmington (May 21), and an attempt was made to flank Corinth and to cut the railroad S. of it, when the confederates evacuated the position, and retreated to Tupelo, pursued by Gen. Pope, though without material results. Corinth was now occupied by the Union troops, who enlarged the defensive works; and in the autumn it was held by Gen. Rosecrans with 20,000 men. The confederates, under Van Dorn and Price, with about 40,000 men, undertook to recapture the place. On Oct. 3 they attacked a strong outpost, which they carried, inflicting considerable loss; and on the 4th they endeavored to take Corinth by storm. The assault was made in two columns at different points. Each column gained some advantage at first; but when they reached the main defensive line both were swept back in utter rout. The whole confederate force fled in disorder, and were pursued for several miles with great slaughter, and without making a show of resistance. The entire Union loss was 315 killed, 1,812 wounded, and 232 prisoners, taken on the 3d. The confederate loss, as stated by Rosecrans, was 1,423 dead left behind and buried on the field, probably 5,000 wounded, and 2,248 prisoners, besides large quantities of small arms and ammunition.

CORINTH, Gulf of. See LEPANTO.

CORINTHIANS, Epistles to the, two canonical epistles of the New Testament, ascribed by the unanimous testimony of Christian antiquity to the apostle Paul, and addressed by him to the church which he had planted at Corinth about A. D. 52. The first was written from Ephesus between the years 56 and 58. It was designed to rebuke party divisions and consequent disorders which had arisen in the Corinthian church,

and also to give decisive judgments on certain practices, in regard to which the Corinthian converts had been affected by the proverbial immorality of the place. "Every one of you," Paul wrote to them (i. 12), "saith, I am of Paul, and I of Apollos, and I of Cephas, and I of Christ." Critics are almost unanimous in assuming that the party of Paul consisted of Christians who had been converted by him, chiefly from paganism; that the party of Apollos favored a Hellenico-philosophical tendency, and adopted Alexandrian forms of thought; and that the followers of Peter encouraged the tendency, common in the early churches, to engraft upon Christianity the ritual and restrictions of Judaism. But the greatest difference of opinion exists as to the party of Christ, most of the writers on the subject agreeing however so far as to assume that this party objected to the authority which Peter, Paul, and Apollos enjoyed with the other parties, and wished Christ to be regarded as the only head and authority of the church. In the first four chapters the apostle condemns their assumption of wisdom and disposition to glory in men, and urges them to unity on the foundation which is laid in Christ. In the remainder of the epistle he censures the church for having tolerated immoralities, condemns lawsuits between Christians before heathen judges, and, in answer to queries proposed to him by the Corinthians, gives various instructions concerning marriage and celibacy, the use of meat which had been offered to idols, the exercise of supernatural gifts, and the proprieties of public worship. The epistle closes with an elaborate exposition of the doctrine of the resurrection, and with general greetings. The second epistle has been much admired for its oratorical structure. The occasion of it seems to have been less special, at least less urgent; for he congratulates the disciples on the effect of his former censures, which had produced a godly sorrow and a revival of proper discipline. The burden of the second epistle is to commend them for their steadfastness, to rejoice in the conviction that he had labored with them in all sincerity and with all zeal, and to apologize to them for what might appear to be a foolish pride. It vindicates the character and effects of the religion which he had proclaimed, and his own dignity and authority as an apostle, apparently with reference to anti-Pauline influences which were still operating in the church. This second letter was probably written from Philippi, and about one year after the sending of the first. The Pauline origin of these two epistles is generally recognized even by the theologians of the critical school, and in the modern controversies on the life and true teachings of Jesus they are on that account of special importance. It is inferred from 1 Cor. v. 9 that our first epistle to the Corinthians was preceded by one which is now lost. An apocryphal book extant in the Armenian language (latest edition by Aucher, Venice, 1819) claims to be this epistle, and has found a defender in Rinck, who has translated it into German (1823). A number of exegetical writers, as Olshausen, Bleek, Neander, Ewald, Hilgenfeld, and Klöpper (*Exegetisch-kritische Untersuchungen über den zweiten Brief an die Korinther*, Göttingen, 1869), assume that another letter which is likewise lost was sent after the first and before the second; while Weisse and Hausrath consider the second epistle as a combination of two or three different epistles, and in particular the first seven chapters to have been written later than the last four.

CORIOLANUS, the name bestowed by the Roman people on the patrician Cneius Marcius, for the conquest of the Volscian town of Corioli. He was a leading member of the senate during the dissensions which followed soon after the establishment of the tribunes. Having been rejected as candidate for the consulship, he was so exasperated against the people, that during the great famine which then occurred he proposed in the senate the retention of grain sent from Sicily until the plebeians should consent to sacrifice the new magistracy created for the defence of their rights (491 B. C.). For this he was impeached by the tribunes and condemned to exile by the assembly of the people, to which his case was referred by the senate. He left Rome, made his way to Antium, the capital of the Volsci, against whom he had fought bravely a few years before, took the command of their army, ravaged the Roman colonies, conquered the towns of the Latins, their allies, and compelled this people to join him. He penetrated to Rome, and ravaged from his camp at the Cluilian dike the lands of the plebeians, sparing those of his own order. The terrified plebs now entreated the senate to revoke the decree of banishment; the senators refused to compromise the dignity of Rome, but were finally compelled to yield. Five consular and other distinguished citizens carried the decree of recall into the camp of Coriolanus; but he demanded the restitution to the Volsci of all the lands formerly conquered from them, and the acceptance of this condition within 30 days. Before the expiration of this term the Romans, reduced to extremity, sent one embassy after another to the haughty exile. He refused to listen to the senators or to the priests, but could not resist the reproaches of his mother Veturia, and the tears of his wife Volumnia, who led an embassy of matrons. "Thou hast saved Rome," said he to his mother, "but lost thy son." He then returned with his army into the land of the Volsci, who, according to some historians, punished his defection with death; according to others, he was suffered to live quietly among them. The matrons of Rome, it is said, mourned his death for a whole year, in a temple erected to Fortuna Muliebris, to commemorate their merits. The history of Coriolanus contains so many improbabilities that its authenticity has been seriously questioned by modern critics.

CORK (Lat. *cortex*, bark), the soft elastic bark of a species of oak (*quercus suber*) which grows abundantly in Spain, Portugal, Italy, Algeria, and the south of France. Commerce is indebted to Portugal for its largest supply. When the tree is 15 years old the barking is commenced, and may be repeated every eight or



Cork Oak (Quercus suber).

ten years afterward, the cork increasing in quantity though not in quality at each operation. Trees thus barked will, it is said, live 150 years. The cork is removed from the trees in July and August. This is done by making incisions around the tree and longitudinally to the root, when the pieces are easily detached.



Cork Tree—Cutting Bark.

These are then soaked in water, pressed under heavy weights, dried before a fire, and stacked or packed in bales for exportation. The cork cutters divide the sheets of cork into narrow strips, and, after cutting these of the proper length, round them into a cylindrical form with a very sharp, thin-bladed knife. Of late years, however, corks are made in vast numbers by a machine of American invention, with which a man will make more in a day than he could by hand in 20 days. The hand-made corks, however, are the best. Spanish black is made from the burnt parings of cork.—Cork and its uses were known among the ancients, but it does not appear to have been common until the 15th century, when glass bottles first came into general use. Cork is employed in various ways, but especially for stopping vessels containing liquids, and, on account of its buoyancy in water, in the construction of life boats. It is also used in the manufacture of life-preservers and cork jackets. This invention appears to be of very early date, as Plutarch in his life of Camillus refers to it. About 6,000 tons of cork bark are annually shipped from cork-producing countries, and an equal quantity used for home consumption.

CORK. I. The southernmost county of Ireland, in the province of Munster, bounded N. by the county Limerick, E. by Waterford and Tipperary, S. by St. George's channel, and W. by Kerry; area, 2,873 sq. m.; pop. in 1871, 516,046 (in 1841, 773,398). The W. part is hilly, the N. and E. remarkably fertile. The county is larger and has more arable land than any other in Ireland. It is watered by the Lee, Blackwater, Bandon, and smaller streams, none of which are here navigable to any great distance. The coast is broken by fine bays and inlets, affording excellent anchorage, and there are several islands belonging to this county. Iron, copper, and coal mines, manganese, fullers' earth, brick clay, and limestone exist. The iron mines are no longer worked, but those of copper at Allahies, in the extreme west, are the richest in Ireland. The climate is mild but moist. Agriculture, except near the seacoast, in the E. portions of the basins of the Blackwater and Lee, and in the neighborhood of the great lines of communication, is carried on with little skill. The staples are potatoes, oats, wheat, and dairy produce. Fisheries are extensively prosecuted. The chief trade is in provisions, and almost the only manufactures are whiskey and porter. The county is divided for judicial purposes into the East and West ridings. **II.** A city and river port, capital of the above county and a county in itself, at the head of the estuary of the Lee, 136 m. S. W. of Dublin; pop. in 1871, 78,382, or including the parliamentary boundary, 97,887. It is the third city of Ireland in importance and population, Dublin and Belfast alone ranking before it. On the land side it is encompassed by hills of no great height, and by suburbs inhabited by an extremely poor population. It is lighted with gas and well supplied with water. The central part occupies half of an island in the river, connected with the mainland by bridges, the whole number of which within the city limits is nine. The principal streets are on the S. side of the Lee, and both channels are lined

with quays almost throughout the extent of the city. Above the city the river banks for several miles are occupied by fine villas and pleasure grounds. The most prominent public buildings are the court houses, jails, house of correction, female penitentiary, convict depot, lunatic asylums, two infirmaries, the bank of Ireland, savings bank, chamber of commerce, county club house, and custom house. It is the seat of an Episcopal and of a Roman Catholic bishop. There are seven Episcopal churches, including the cathedral, a plain edifice, mostly of modern erection, and the church of St. Anne's, Shandon, with a stone tower 120 ft. high, and a fine peal of bells. The Episcopal church has also two chapels of ease. The Roman Catholics have four parochial churches, and the dissenters five places of worship. There are five monasteries and four nunneries, with a chapel attached to each. Near the city is a cemetery after the plan of Père la Chaise, and to the west of this is a fine promenade a mile long, called the Mardyke. A tract of 240 acres has been reclaimed from the river and laid out as a park, where are held annual races which are largely attended. The most important literary and scientific institutions are: Queen's college, opened in 1849; the royal Cork institution, incorporated in 1807 with a view mainly to the advancement of agriculture; the Cork library society; the mechanics' institute; agricultural, horticultural, and Cuvierian societies; and an art union. The charitable foundations include a house of industry for 1,200 paupers, a fever hospital, a Magdalen and two lying-in asylums, a foundling hospital, &c. There are two theatres, and barracks for infantry and cavalry. There are a weekly and four daily newspapers. The manufactures embrace glass, iron, and iron ships and machinery, gloves, leather, flour, and malt and distilled liquors. The harbor, to which the city owes all its importance, is famous for capacity and safety, and is divided into upper and lower. The latter, 11 m. below the city, 3 m. long, 2 m. broad, and completely landlocked, is entered by a channel 2 m. long and 1 m. wide, defended by two forts. In it are several islands, on one of which is Queenstown, formerly called the Cove of Cork, and on others are powder magazines, artillery barracks, ordnance depots, &c. The inner harbor extends 5 m. below the city. During the last 25 years great improvements have been made by the harbor board; the old quays have been replaced by substantial quays of cut stone; more than £300,000 have been expended upon improvements connected with the river; and the corporation has erected at a cost of £25,000 two fine bridges, the one finished in 1861, the other in 1864. A flourishing trade is carried on, the imports consisting chiefly of timber, and the exports of grain, live stock, provisions, and linen. The foreign and colonial commerce is chiefly with the Baltic, the Mediterranean, Portugal, and Canada. The registered shipping of the port in 1869 was 306 sailing vessels of 27,554 tons, and 45 steamers of 9,915 tons; the entrances in 1858 were 324 vessels, with cargoes or in ballast, of 114,460 tons; clearances, 110 vessels of 28,089 tons. The declared value of exports in 1868 was £160,202; the amount of customs duties received, £349,945. The harbor dues in 1871 amounted to £27,738. Four railways radiate from Cork, viz.: the Great Southern and Western, the Cork and Bandon, the Cork and Youghal, and the Cork, Blackrock, and Passage. The city is governed by a mayor, 14 aldermen, and 42 councillors.—The walls of Cork were built by the Danes in the 9th century, and its name, derived from the Irish *corroch* or *corcagh*, a swamp, was given to it in allusion to the original character of its site. It was colonized and garrisoned by the English in 1172. In 1620 it was counted the fourth city in Ireland, ranking then below Dublin, Waterford, and Limerick, and above Belfast. In 1690, being held for James II., it was besieged by the duke of Marlborough with a force of 10,000 foot and 1,200 horse, against which it held out but a few days.



St. Patrick's Bridge.

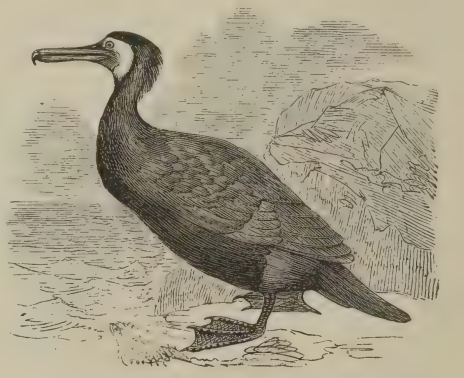
CORLEONE, a town of Sicily, in the province and 22 m. S. by W. of the city of Palermo, near the railroad to Girgenti; pop. in 1861, 13,123. It is well built, though decayed, and has a gymnasium, a prison, and several other public buildings. Agriculture is the chief occupation of the inhabitants. The town was taken by

the Saracens in 840, afterward long occupied and fortified by the Normans, and in 1237 given by the emperor Frederick II. to a colony of Lombards, who took an active part in the insurrection of the Sicilian vespers, and in 1302 repelled an assault by Charles of Valois.

CORMENIN, Louis Marie de la Haie, viscount de, a French politician, born in Paris, Jan. 6, 1788, died May 6, 1868. Admitted to the bar in 1808, he was two years later appointed by the emperor auditor in the council of state. On the restoration he joined the royalists, was promoted to the office of master of requests, was faithful to the Bourbons during the hundred days, and resumed his situation on their second return. He now published several legal treatises, the most important of which has passed through several editions under the title of *Droit administratif;* and in return he received the title of baron, and afterward of viscount. In 1826 he joined the liberal party, was elected to the chamber of deputies in 1828, acted with the opposition, opposed the election of Louis Philippe in 1830, and after it refused a seat in the new council of state, and resigned his place in the chamber of deputies. He was reëlected, however, from the department of Ain. In 1831 he was elected simultaneously by four electoral districts, and in 1834 reëlected for Joigny and another district, and choosing Joigny represented it until the session before the last of the old chamber. He wrote several political pamphlets of great influence, among them one which killed the bill demanding an apanage for the duke de Nemours, and, under the *nom de plume* of "Timon," several brilliant sketches of political characters, which were republished in a volume called the *Livre des orateurs* (translated into English, New York, 1847). In 1845 and 1846 he wrote two pamphlets on the ultramontane controversy, which impaired his popularity. He was a champion of universal suffrage, and after the revolution of 1848 was chosen to the constituent assembly by four electoral districts, was made chairman of the committee on the constitution, and had a large share in framing the republican constitution of 1848. On the *coup d'état* of Dec. 2 he denounced its author, but afterward accepted a seat in the new council of state. He was the originator of several institutions of charity and benevolence. Besides his law books and pamphlets, M. Cormenin published *Études sur les orateurs parlementaires* (1838; 15th ed., 1847); *Entretiens de village* (1846), which reached six editions in the first year, and of which a part appeared in 1856 under the title of *Dialogues de maître Pierre*, and gained a prize; and *Le droit de tonnage en Algérie* (1866).

CORMONTAIGNE, Louis de, a French military engineer, born about 1695, died Oct. 20, 1752. He entered the corps of engineers in 1713. Between 1734 and 1744 he directed the sieges of Trarbach, Philippsburg, Menin, Ypres, La Knoque, Furnes, and Freiburg. He was afterward employed in surveying the fortifications of France, and in superintending the erection of new works at Strasburg, Metz, Bitsch, and Thionville. He attained the rank of maréchal-de-camp, and was the author of improvements on Vauban's system of fortification.

CORMORANT (Fr. *cormoran*), a web-footed bird of the order *natatores*, family *phalacrocoracidæ*, and genus *graculus* (Linn.); other synonymes are *phalacrocorax* of Brisson, and *carbo* of Lacépède. The French and English name is supposed to be a corruption of the Latin *corvus marinus* (sea raven), given on account of the black color. The bill is moderate, slender, straight, with the culmen concave, and suddenly hooked at the tip; the sides compressed and grooved; wings moderate and pointed; tail rather short and rounded at the end; toes long, the outer rather longer than the middle, and all four united by a full web; the base of the lower mandible with a coriaceous pouch capable of extension. There are about 30 species described, inhabiting every part of the world, living in large flocks on the



Common Cormorant (Graculus carbo).

seacoast and small islands, and sometimes visiting inland lakes and rivers. They feed exclusively on fish, which they catch dexterously and devour voraciously, without discrimination as to species; hence this bird has become the emblem of gluttony. They are excellent divers, flying and swimming under water, and remaining submerged for a long time. The nest is made of seaweed, grasses, and coarse materials, heaped to a considerable height, and placed on inaccessible rocks or ledges and trees; the eggs are from three to five, long and narrow, of a light greenish and sometimes almost white tint. The common cormorant (*G. carbo*, Linn.), which may be taken as the type of the genus, has a large oblong head, long and stout neck, with a full body; feet short, strong, and placed far behind. The plumage of the head, neck, lower parts, and lower back is glossy, blended, and silky, and on the upper back and wings compact with loose glossy margins; on the back of the head and neck the middle feathers are elongated, and some of

them erectile; around the eye, the base of the bill, and the throat, the skin is bare. The bill is dusky, lighter at the base of the lower mandible; the general plumage is black, glossed with greenish blue; a white patch on the throat, with some white feathers on the sides over the thighs. The length is 37 inches, and the extent of wings 62 inches; weight 7½ lbs. The female resembles the male, but the white feathers are wanting. Cormorants are common in the south of the United States in winter, going to Labrador and Newfoundland in the spring to breed. Their flight is strong and swift; the gait on land is awkward and waddling. They procure their food by diving from the surface of the water, and not from on the wing. When they catch a fish in an inconvenient position, they throw it up in the air, and receive it again as it descends head downward. This species is rarely seen further south than Maryland, whence northward it is quite common in winter; it is sometimes seen in northern markets, but the flesh is dark, tough, and fishy; the eggs are seldom eaten, unless from necessity. This bird seems to be extensively distributed in both hemispheres, being common in England, France, and Holland, but rare in Germany and southern Europe; if not the same species in America, Europe, and Asia, it is extremely difficult to distinguish them by any specific characters. In China these birds are trained to fish for their masters; at first a ring is put around the neck to prevent swallowing, but the bird soon learns to bring the fish to its owner, being allowed after he is satisfied to fish on its own account.—The double-crested cormorant (*G. dilophus*, Vieill.) differs from the Florida cormorant (*G. Floridanus*, Aud.) chiefly in its larger size, and its more numerous long feathers behind the eyes. The



Double-crested Cormorant (Graculus dilophus).

former measures 33 inches in length and 51 in extent of wings; weight about 5½ lbs.; the latter measures 30 inches in length, 46 in extent of wings, and weighs only 3¼ lbs. The double-crested species also goes north to breed, and spends the winter on the eastern coasts, rarely going further south than the capes of North Carolina, where the domain of the Florida species begins. The Florida cormorant is a constant resident in the southern states, breeding on the keys of the peninsula of Florida; like the others, it is gregarious, and is seldom found more than five miles from land; according to Audubon, it nestles on trees, beginning to pair about April 1. Another American species is the *G. violaceus* (Gmel.), the most beautiful of all, from the Columbia river. The shag (*G. cristatus*, Fabr.; *P. graculus*, Dumont; *C. graculus*, Temm.) is a small species, a denizen of nearly the whole world, according to Nuttall.

CORN, a hard, circumscribed tumor, formed of thickened cuticle, situated generally on the feet, on the joints, or between the toes, and sometimes in the sole of the foot; but it may be formed over any projecting bony point subjected to frequent pressure or friction. It is hardly necessary to state that the usual cause of corns is the pressure of tight boots and shoes, or the friction of loose and unyielding ones. The common hard corn is simply a series of epidermic unorganized laminæ; the soft corn, such as is usually found between the toes, is more properly a fungous, irritable growth from the true skin, extending often through the dermis to tendons, ligaments, and even to the periosteum. According to Sir Benjamin Brodie, when a corn is completely formed, there is a minute bursa between it and the true skin, to prevent injury to the subjacent parts. In damp weather corns swell, like all hygrometric bodies; the pain they cause is not in the corn itself, but in the parts compressed by it, and this, as most persons know, may be very severe. That pressure is the cause of these growths is evident from the fact that they do not occur in persons who go barefooted, nor on the hands. To get rid of corns, the first requisite is to avoid the constantly acting cause of a too tight or ill-fitting shoe. The hard corn may generally be removed by the action of warm water, or softening liniments, assisted by a needle, blunt knife, or file of steel or pumice stone. The deep varieties require extirpation by the needle or knife, or by various plasters and caustics. The nostrums advertised for their relief are in general worse than useless. Many devices are in use by sufferers to relieve the pressure on corns which they dare not have extirpated; as pieces of soft leather or cloth pierced in the centre, and smeared with emollient and narcotic ointments. The operation for their removal is painless, bloodless, and of short duration, and effectual if the exciting causes be avoided.

CORN, Indian. See MAIZE.

CORNARO, a Venetian family, which furnished several doges in the 14th, 17th, and 18th centuries. The following are its best known members. **I. Caterina,** queen of Cyprus, born

in Venice in 1454, died there, July 5, 1510. In 1473 she succeeded her husband, James II., Lusignan, as regent, and reigned until Feb. 26, 1489, when, worried by incessant jealousies, she abdicated in favor of the Venetian republic. On her return to Venice she was received with great distinction by the doge, and the castle of Asola in Treviso was assigned to her as a residence. Bembo, her relative, afterward eminent as cardinal, celebrated in his *Gli Asolani* her brilliant intellectual and social qualities. Her portrait was painted by Titian, and her life has afforded a rich field of romance to French novelists. **II. Luigi,** an advocate of temperance, born in Venice in 1467, died in Padua about 1567. After having injured his health by excesses, he led from his 40th year to the time of his death an abstemious life, restricting himself, by the advice of his physicians, to a daily allowance of 12 ounces of solid food and 14 ounces of wine. In his 83d year he wrote the first part of the *Discorsi della vita sobria* (Padua, 1558), which was followed by three others, composed at the ages of 86, 91, and 95 respectively. This work has been translated into Latin, French, German, English, and other languages, and the English version, "Sure and Certain Method of attaining a long and healthful Life," reached its 39th edition in 1845.

CORNBURY, Edward Hyde, lord, governor of New York, died in London, April 1, 1723. He was grandson of Edward Hyde, first earl of Clarendon, and eldest son of the second earl, and one of the first officers of his household troops to desert from the service of James II., his uncle by marriage, to the prince of Orange in 1688. In return for this service he was made governor of New York, where he arrived May 3, 1702. He was in debt, and was rapacious and bigoted to such a degree as to have left the reputation of being the worst governor ever appointed to the colony. When the yellow fever appeared in New York in 1703, he retired to Jamaica, L. I., and the best house in the place happening to belong to Mr. Hubbard, the Presbyterian minister, he requested to have it vacated for his accommodation. Instead of returning the house to the owner, he made it over to the Episcopal party. He imprisoned two ministers sent out from London for preaching in New York without license. Complaints being made, he was removed from office in 1708. His creditors had him taken into custody; but after the death of his father he returned to England, and succeeded to the earldom of Clarendon.

CORNEA, the transparent concavo-convex disk which forms the anterior fifth of the globe of the eye, fitted accurately into the sclerotic or fibrous coat forming the posterior four fifths of the organ. It is a segment of a smaller sphere than the sclerotic, and is from 7 to 7½ lines in diameter, the greatest diameter being the transverse. Its anterior convex surface is covered by a continuation of the conjunctival epithelium, and its posterior concave surface is lined also with delicate pavement epithelium, which is in contact with the aqueous humor, and supposed by some to be concerned in the secretion of this fluid. The degree of convexity varies, being usually greatest in children and near-sighted persons. Its circumference is generally described as fitting into the sclerotic like a watch crystal into its frame. Its principal thickness, which is nearly the same at all points, is made up of six to eight layers of soft indistinct fibres, continuous with and similar to those of the sclerotic; these may be separated by maceration. Behind the cornea proper is described an elastic transparent lamina, called the membrane of Demours. Though no vessels have been traced into the cornea, the phenomena of inflammation, adhesion, and ulceration indicate their existence. A superficial and a deep series of vessels surround the cornea, anastomosing freely around its margin; the former are continuous with those of the conjunctiva, and the deep with the short ciliary arteries. In diseased conditions, both sets of vessels may be prolonged into its substance. It is supplied with delicate filaments from the ciliary nerves. Its diseases are many, frequent, and dangerous to vision; from its exposed situation, it is liable to suffer from blows, cuts, and the introduction of foreign substances. It is often inflamed in various ophthalmic diseases, resulting in opacity, ulceration, increased vascularity, softening, and rupture from gangrene; these affections are tedious and difficult to cure, are often painful, and generally leave the patient with more or less obstruction of the power of vision. In old persons, the circumference of the cornea often presents a whitish zone, a line or two wide, the result of physiological causes, and not interfering with vision. The convexity of the cornea in aquatic and amphibious animals is slight, the membrane being sometimes nearly flat.

CORNEILLE. I. Pierre, the father of the classical drama in France, born in Rouen, June 6, 1606, died in Paris, Oct. 1, 1684. After studying under the Jesuits of Rouen, he followed his father's profession as an advocate, and practised for a short time in the parliament of Normandy, without taste for the bar and without success. In a love adventure he became the successful rival of a friend. This diverted him from the bar to poetry, and he made it the subject of his first dramatic piece, the comedy *Mélite*, which was produced in 1629. It obtained unusual success, and was followed between 1632 and 1636 by *Clitandre*, *La veuve*, *La galerie du palais*, *La suivante*, *La place royale*, *Médée*, *L'illusion comique*. Though these pieces were composed according to the rude standard of the time, and were neither natural nor regular, they were yet superior to the works of his contemporaries, and were performed with applause. They made the author known to Cardinal Richelieu, who himself composed plans of comedies, the execution of which was performed under his direction by

several salaried authors. Corneille was admitted into the coterie of the cardinal's official poets, but either by his success incurred the jealousy of his master, or offended him by venturing to improve one of the plans submitted. At the age of 30 years, having lost the favor of Richelieu, Corneille returned to Rouen, where by the advice and aid of M. de Chalon, a former secretary of Maria de' Medici, he learned the Spanish language. The fruit of his studies was the tragedy of *Le Cid*, founded on a play of Guilhem de Castro, and the first French dramatic masterpiece. It was distinguished by simplicity in treatment, and by a purity and elevation of style of which France had furnished no previous example. Though received with enthusiasm by the public, it brought upon the author a violent literary persecution. The academy, urged by Richelieu, published in 1638 the *Sentiments de l'académie sur Le Cid*, by which that drama was admitted to be a masterpiece, though most of its peculiar beauties were censured as faults. Its popularity spread through Europe, and "As beautiful as the Cid" became a proverb in France. The tragedy of *Horace* (since called also *Les Horaces*) appeared in 1639, and surpassed its predecessor in originality, and also in the force and grandeur which characterized alike the situations, personages, and dialogue. It was followed in the same year by *Cinna*, esteemed by Voltaire the most finished of the author's pieces, and in 1640 by *Polyeucte*, which is usually esteemed by French critics the best work of Corneille, if not of the dramatic art. In 1641 and 1642 he produced *Pompée* and *Le menteur*, the former of which was not equal to his previous tragedies, but the latter, founded on a Spanish piece of Alarcon, renewed the glory which he had obtained by the *Cid*, and was the first French comedy which gave a lively and natural picture of the manners of the time. In 1643 followed *La suite du menteur*, which was not more felicitous than the second parts of poems usually are. The decline of his genius appeared in the complicated and fantastic subjects, excessive desire for theatrical effect, chimerical ideals, and subtleties of disquisition which now began to mark his pieces. *Rodogune*, *Théodore*, *Héraclius*, *Don Sanche d'Aragon*, *Nicomède*, *Andromède*, and *Pertharite*, between 1645 and 1653, were of unequal though all of inferior merit, and the decided failure of the last caused him to renounce dramatic composition for six years. In the interval he translated the "Imitation of Christ" into French verse. In 1659 he was induced to return to the theatre, only to disfigure in his *Œdipe* one of the most admirable themes of ancient tragedy. The applause with which this piece and his *Toison d'or* (1661) were received induced him to write constantly for 15 years, but no one of his later dramas has kept its place on the stage. *Sertorius* (1662) has some interesting and pleasing scenes; *Sophonisbe*, *Othon*, *Agésilas*, and *Attila* (1663–'67) show the almost powerless efforts of a failing imagination; *Tite et Bérénice* (1670) was an unequal contest with Racine, then in the early vigor of his talent; the ballet tragedy of *Psyché* (1671) was composed in conjunction with Quinault and Molière; and *Pulchérie* (1672) and *Suréna* (1674) were his last and also his feeblest attempts. He wrote also in prose important *Examens* of each of his plays, and three discourses on the drama, on tragedy, and on the three unities. The reputation of Corneille rests chiefly upon the *Cid*, and the four or five pieces which immediately succeeded it, which are distinguished by the justice and vigor with which they exhibit great passions or great characters. In these his language is elevated and his sentiments generally noble. Love, in the delineation of which he is least successful, he uses as a secondary but never as the primary motive of his dramas. His eloquence, often remarkable for strength and compression, sometimes becomes pompous declamation, amid which a few simple words interspersed here and there have been extravagantly praised. Instances of this are the *Qu'il mourût* of the old Horace, the *Soyons amis* of Cinna, and the *Moi* of Médée. Corneille was acquainted with polite literature, history, and politics, but he chiefly regarded them in their connection with dramatic writing; for other parts of knowledge he had neither curiosity nor much esteem. His temper was hasty and his manners were somewhat blunt. He rarely visited the *salons*, and was uninteresting in conversation, so that the great Condé said that he ought to be heard only at the hôtel de Bourgogne. The best *éloges* of Corneille are those of La Bruyère, Racine, Gaillard, Bailly, Auger, and Fabre; the best lives are those of Fontenelle, Taschereau (1829), Vignet (1846, *Anecdotes*, &c.), and Guizot (*Corneille et son temps*, 5th ed., 1866). Among the best of the numerous editions are those of Thomas Corneille (1706), Joly (1738), Voltaire (1754 and often afterward), Renouard (1817), and Lefèvre(1854). **II. Thomas,** brother of the preceding, also a dramatist, born in Rouen, Aug. 20, 1625, died at Andelys in 1709. He was an industrious and prolific writer, and in the course of his career produced upward of 42 dramatic pieces, besides a dictionary of arts and sciences, a dictionary of history and geography, a metrical translation of Ovid's Metamorphoses, and some miscellaneous works. His plays enjoyed great popularity; his style was pure; and it is customary to rank him next, though at a considerable interval, to Racine and the elder Corneille. Of all his plays three only, *Ariane*, *Le comte d'Essex*, and *Le festin de Pierre*, have kept possession of the stage. In 1685 he succeeded his brother in the academy. In the latter part of his life he became blind, but pursued his literary labors with undiminished zeal.

CORNELIA. **I.** A Roman matron, the younger daughter of P. Scipio Africanus the elder,

and of Æmilia, daughter of L. Æmilius Paulus, who was killed at Cannæ (216 B. C.). She was of the highest birth in Rome, yet became the wife of T. Sempronius Gracchus, a member of a plebeian family renowned for its popular sympathies and acts. She was the mother of twelve children, only three of whom lived to adult age: Sempronia, who was married to the younger Africanus, and the two famous tribunes, Tiberius and Caius Gracchus. Eminent for gravity and virtue, she had a cultivated mind, and was familiar with the language and literature of Greece. After the death of her husband she was a central figure of Roman society, and gathered around her all that was noble, learned, and high-minded in the republic. She refused an offer of marriage from Ptolemy, king of Egypt, and after the murder of Caius Gracchus (121) retired to Misenum, a place much affected by the Roman nobility, and spent several years in the exercise of hospitality, and in the society of men of letters. Her house became in after times the residence of Marius and Lucullus, and the emperor Tiberius died there. She survived Caius Gracchus some years, and must have lived to extreme old age. Her character is the purest of any woman's mentioned in the historical period of Rome. **II.** A daughter of P. C. Scipio, who was consul in 52 B. C. She was married first to Publius Crassus, son of the triumvir, and was left a widow by his death at the battle of Carrhæ (53); and afterward to Pompey, who when the civil war commenced sent her to Lesbos, which she left, regretted by the people, after the battle of Pharsalia (48). Accompanying Pompey in his flight to Egypt, Cornelia was an eye-witness of her husband's murder, after which she fled to Cyprus and thence to Cyrene.

CORNELIS, Cornelius, a Dutch artist, born in Haarlem in 1562, died in 1638. He received his first instruction from Peter Aertsen the younger, called Long Peter, studied at Antwerp under Porbus and Coignet, and at the age of 17 departed for Italy. He was compelled by the plague to return to Haarlem, where he rose to considerable distinction as a painter of history and portraits. His most celebrated works are the "Company of Archers of Haarlem," containing portraits of the principal members, and the "Deluge," painted for the earl of Leicester. Many of his works are in the galleries of Dresden and Vienna.

CORNELIUS, Elias, D. D., an American clergyman, born at Somers, Westchester co., N. Y., July 31, 1794, died in Hartford, Conn., Feb. 12, 1832. He graduated at Yale college in 1813, studied theology there under Dr. Dwight, and afterward at Litchfield under Lyman Beecher, was licensed to preach in 1816, and was immediately afterward appointed an agent of the American board of commissioners for foreign missions. Having been ordained as an evangelist in 1817, he set out on a mission to the south to raise funds and to establish missions among the Indians. While on his way to the Chickasaw nation he met a band of Cherokees who had with them an Osage girl of five years, whose mother they had killed and scalped. He redeemed the child, provided for her care and education, and wrote a small book, "The Little Osage Girl," which was adopted as a Sunday school book, and had much influence in promoting the cause of Indian missions. In 1819, after declining several other invitations, he was installed as colleague of Dr. Worcester over the Tabernacle church at Salem, Mass., it being stipulated that Dr. Worcester might devote three fourths and Cornelius one fourth of their time to the cause of missions. Dr. Worcester died in 1821, and Mr. Cornelius remained as pastor in Salem till 1826, when he accepted the appointment of secretary of the American education society. In 1829 he received the degree of D. D. from Dartmouth college, and was chosen professor of divinity in that institution. He declined this appointment, and also that of secretary of the American Bible society. Jeremiah Evarts, secretary of the board of commissioners for foreign missions, having died, Dr. Cornelius, in January, 1832, accepted the appointment to that position, and entered upon its duties. But in the following month, while on his way from Boston to New York, he was attacked with a brain fever at Hartford, where he died. Besides the "Little Osage Girl," he published many pamphlets and sermons, but his reputation rests mainly upon his successful efforts in behalf of missions and theological education. A memoir of Cornelius, by B. B. Edwards, was published in 1833.

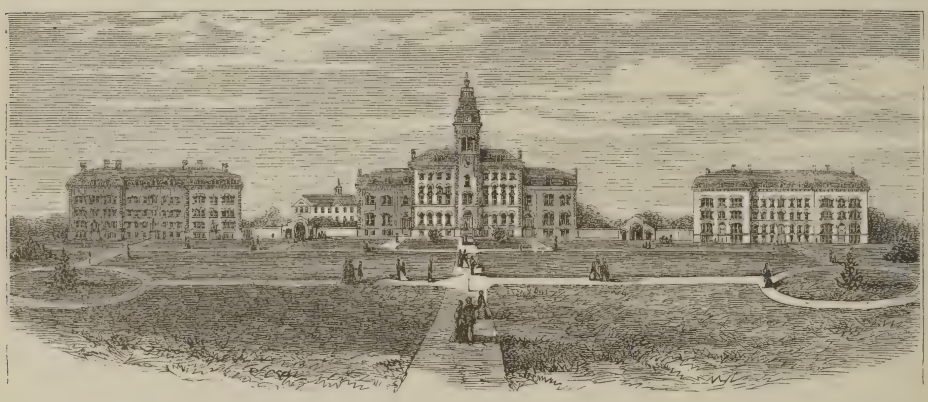
CORNELIUS, Peter von, a German painter, born in Düsseldorf, Sept. 16, 1787, died in Berlin, March 6, 1867. His father was inspector of the Düsseldorf gallery, since removed to Munich, and died in somewhat straitened circumstances when Cornelius was 16 years of age. His mother was advised to apprentice him to a goldsmith, but refused to take him from the Düsseldorf academy, where he was pursuing his studies, and he was soon able to contribute to the family support by illustrating almanacs and painting banners. At the age of 19 he received a commission to paint the cupola of the old church at Neuss with colossal figures in chiaroscuro. While at Frankfort in 1810 he commenced a series of illustrations to "Faust," which he dedicated to Goethe, and which are still considered among his most successful and original works. The following year he established himself at Rome, where, with the coöperation of Overbeck, Koch, Schnorr, Schadow, and others, he laid the foundation of a new German school. The artistic brotherhood occupied a part of the old convent of St. Isidore, where they pursued their art with an intentness and exclusiveness which fixed upon them the attention of contemporary painters in Rome, and secured the sympathy of such men as Goethe, Schlegel,

and Niebuhr. The revival of fresco painting was conceived to be the fittest means of carrying into effect their ideas, and Bartholdy, the Prussian consul general, initiated the movement by employing the leading artists of the new school to paint the walls of his villa. Cornelius executed for him two frescoes, "Joseph interpreting the Dream of Pharaoh's Chief Butler," and "Joseph recognizing his Brethren," with so much success that he was commissioned by the marquis Massimi to decorate his villa with frescoes from the *Divina Commedia* of Dante. He advanced no further than the designs of these, which were afterward engraved by Schöfer, having received an invitation from the crown prince of Bavaria to aid in the decoration of the Glyptothek in Munich. Another of his most celebrated works executed at Rome was a series of designs illustrating the *Nibelungenlied*, the thoroughly national spirit of which has made them very popular in Germany. Cornelius left Rome in 1819, and having reorganized the Düsseldorf academy, of which he had been appointed director, commenced his labors on the Glyptothek, in which he was steadily employed, with the assistance of a band of pupils, for the next ten years. Two immense halls were appropriated to him, one of which, the hall of heroes, he illustrated with subjects from the Iliad, and the other with a series illustrating the whole Grecian mythology. In both the figures are of colossal proportions, and in grandeur of general conception, in simplicity of arrangement, and in evidences of profound learning, the work is one of the most remarkable of modern times. During this period the general decoration of the corridors of the Pinakothek was planned by Cornelius, although the designs for particuar parts and the direction of the whole were confided to Zimmermann and other artists, whom Cornelius, who had now become director of the Munich academy, had thoroughly imbued with his principles. Amid these employments he found time also to execute the frescoes in the Ludwigskirche, one of which, the "Last Judgment," 64 ft. by 30, is the largest picture in the world. In 1833 Cornelius left Munich, which under his influence and that of King Louis had become a great school of art, and resumed his labors in Rome. In 1838 he was elected a foreign member of the French institute, and in 1839 he went to Paris, where he was warmly welcomed by the Parisian artists. His reputation as the chief restorer of fresco painting led the British government to consult him with reference to the decoration of the new houses of parliament. In 1841 he accepted an invitation from the king of Prussia to become director of the academy of Berlin, and to paint a portion of the frescoes in the Campo Santo. The cartoons of these are well known by the published plates, and that of the "Four Horsemen" of the Apocalypse is one of his most powerful and original creations. He was also employed to superintend the decoration of the Berlin museum, and furnished the design for the baptismal "Shield of Faith," presented by the king of Prussia to his godson the prince of Wales. In 1853 he began another design of the "Day of Judgment" for the apsis of the cathedral in Berlin, in preparing the cartoons for which he made repeated visits to Rome. In 1855 his cartoons received a medal of honor at the Paris exposition. His later years were passed at Berlin, where he was principally occupied with the paintings for the Campo Santo.

CORNELIUS NEPOS. See Nepos.

CORNELL UNIVERSITY, an institution of learning situated at Ithaca, N. Y., named from its founder, Ezra Cornell. The university grounds embrace more than 200 acres lying on an upland E. of Ithaca, nearly 400 ft. above Cayuga lake. The site overlooks the town and the valley beyond, and affords an uninterrupted view of the lake with its lofty banks for a distance of 20 miles. The university buildings are situated on East hill, outside the limits of the town and half a mile north of the town hall. Three of them, the McGraw building and the South and North universities on either side, as represented in the accompanying illustration, stand in a row on the edge of the hill and parallel with the line of the lake and the valley. A little further north and at right angles to the main line is the Sibley building, 80 by 40 ft.; while the laboratory, a temporary wooden structure, stands in the centre of the enclosure and opposite the McGraw building. Except the laboratory, these buildings are of dark blue stone with light gray limestone trimmings. The McGraw building, the gift of John McGraw of Ithaca, consists of a main edifice and two wings, and is 200 by 60 ft., with a tower 120 ft. high containing the great bell of the university and a set of chimes. From this tower is obtained a view of the entire surface of Cayuga lake, 40 m. in length, and of the long deep valley extending many miles S. of the lake. The view includes several counties and the courses of many streams. This edifice contains the library and the various museums of the university and numerous lecture rooms. The South and North universities are architecturally alike, each 165 by 50 ft. and four stories high. They are devoted to cabinets, lecture, library, and reading rooms, and dormitories for students. The Sibley building, erected through the liberality of Hiram Sibley of Rochester, N. Y., is occupied by the department of the mechanic arts, and contains the engine room, printing presses, machine shop, and draughting rooms. Standing apart from the above mentioned group of university buildings, and nearest of all to Ithaca, which it overlooks on its E. side at an elevation of 300 ft., is Cascadilla place, a handsome structure of dark blue stone with white stone trimmings, five stories high and 195 ft. long by 100 wide. It derives its name from its situation on Cascadilla creek, which is

remarkable for its many picturesque cascades. It contains apartments for professors and students, a large reception room, and various university offices. Attached to the university farm are a farm house, barns, and other outbuildings. In addition to these buildings the construction of a handsome dormitory for female students has been begun through the munificence of Henry W. Sage of Brooklyn, N. Y. A chapel, the gift of the same person, is now erecting at a cost of $30,000; and the present president has built at an expense of $40,000 a president's house, which he has deeded to the university.—Cornell university is under its charter an organic part of the educational system of the state, and is visited by the regents of the university of New York. Having accepted the proceeds of the land granted by congress for the encouragement of agricultural and the mechanic arts, it is bound by the conditions of the act of incorporation, "without excluding other scientific studies, and including military tactics, to teach such branches as are related to agriculture and the mechanic arts." It is also bound to educate free of all fees for instruction one student from each of the 128 assembly districts of the state. This has been construed to mean an appointment for four years; so that each district may appoint one student each year, and thus have four students in the university. These students are to be selected by yearly competitive examinations from the various public schools and academies maintained by the people of New York. The number of trustees is 24, including the founder, who has been made a trustee for life, 8 *ex officio* trustees, and 15 others who are elected for a term of five years, three retiring each year. The *ex officio* trustees are the eldest male lineal descendant of the founder, the president of the university, the governor and lieutenant governor of the state, the speaker of the assembly, the state superintendent of public instruction, the president of the state agricultural society, and the librarian of the Cornell library in Ithaca. The graduates of the university are



Cornell University.

entitled to fill the place each year of one of the retiring trustees, while the other two are elected by those trustees whose term of office has not expired. The trustees meet regularly twice a year; but the more immediate superintendence of the university is confided to an executive committee. The special features of Cornell university which distinguish it from many other institutions of learning are: 1, non-resident professors; 2, a wide liberty in the choice of studies; 3, the prominence given to studies which shall be practically useful; 4, the absence of a daily marking system; 5, the unsectarian character of the institution. Simple religious services are held daily in the university chapel, but attendance is not compulsory. The faculty is divided into resident and non-resident professors. There are 32 of the former, who have control of all measures of academic government and the various courses of study; the latter are chosen from among scholars of acknowledged eminence in particular departments of learning, and are now (1874) seven in number, each of whom delivers a series of lectures each year. Besides these, there are several special instructors. The plan of instruction embraces three general courses: in arts, in literature, and in science. There are features common to all, but the leading characteristic of each course is implied in its name. In the first named or classical course, which corresponds to the usual academic course in colleges, prominence is given to the ancient languages; the course in literature is intended for those who wish to devote special attention to history, political and social science, and modern literature, especially English; while in the last named course scientific studies predominate, though modern languages, history, literature, and kindred subjects are incorporated. Each of these courses covers four years, at the completion of which the degree of bachelor of arts, of literature, and of science is conferred; a student may, however, enter

at any part of the course for which he is prepared. For the accommodation of those who do not wish to pursue a regular course, elective and special courses are provided. A student may select from the studies pursued at the university any three for which he is qualified, or, if an indigent student, he may continue with but two studies; while any one may be registered as a "special student" in any single branch on condition that he devote as much time to that one study as is required to be given to three. In addition to the provision for general instruction, the plan of the university embraces the following faculties, each distinct for its own purposes of special instruction, but all united for their general development: 1, agriculture; 2, architecture; 3, chemistry and physics; 4, civil engineering; 5, history and political science; 6, ancient and Asiatic languages; 7, north European languages; 8, south European languages; 9, mathematics; 10, mechanic arts; 11, military science and tactics; 12, natural history, 13, philosophy and letters. The departments of agriculture and the mechanic arts were established to carry into effect the provisions of the act of congress granting land for that purpose. The college of agriculture comprises professorships of agricultural chemistry, agricultural geology, horticulture, zoölogy, and veterinary science. The agricultural museum contains models of agricultural implements, of plants, and of farm animals; and there are ample laboratory rooms for the analysis of soils and rocks, the investigation of plants, their characters and diseases, and the dissection of domestic animals. The farm, of nearly 300 acres, affords opportunity for the practical application and illustration of the principles taught. In the Sibley college of the mechanic arts are professorships of industrial mechanics, civil engineering, mathematics, and practical mechanics. The mechanical museum contains many models illustrating mechanical movements, models of various classes of motors, and of engineering constructions, while in the machine shops is a large amount of machinery. There are facilities for field work in engineering and surveying, and for mechanical draughting; and printing in its various forms may be learned by means of the university press. No general degree will be conferred upon any candidate unless he shall have attended a course of at least 12 lectures on general agriculture; and every student, unless specially exempted, is required to take part in the military drill. In addition to the provision for general military instruction, advanced instruction in military science is provided, embracing the study of military engineering, the art of war, and military law. Attendance on this course is optional. A gift from Dean Sage of Albany of $30,000 has been lately received, the income of which is to be devoted to lectures on general theology by divines of different denominations. The academical year comprises about 36 weeks of term time, beginning about the middle of September and ending in the latter part of June, and is divided into the fall, winter, and spring trimesters. To be entitled to admission, applicants are required to be not less than 16 years of age and to pass a satisfactory examination. During the first two years in all the courses instruction is partly by recitations, but by lectures whenever the subject admits of that mode of teaching. With advanced students the system of teaching by lectures and frequent examinations is adopted as far as practicable. Examinations, oral and written, are held at the end of each term. Each student is required to devote at least three hours a day to lectures and recitations. In 1873–'4 there were 461 students: 119 in the course in science, 84 in engineering, 32 in mechanic arts, 30 in literature, 25 in classics, 21 in architecture, 7 in agriculture, 7 in chemistry, 6 in natural history, 120 in elective studies, and 10 resident graduates. Of these 135 were state students, educated free of charge. The total number of degrees conferred was 100: bachelors of science, 45; of literature, 3; of philosophy, 6; of arts, 17; of agriculture, 2; of architecture, 1; of engineering, 18; of mechanic arts, 3; master of arts, civil engineer, and doctor of philosophy, 1 each; and 2 licentiate certificates. No honorary degrees have ever been conferred by the institution. The charge for tuition is $15 per term, or $45 per annum. Some of the students support themselves while pursuing their studies by laboring on the farm, in the machine shops, or in the printing establishment, for which they receive from the university the usual rate of wages. The university press affords maintenance to more than 20 students. Skilled labor, however, is mostly in demand. The prizes offered for excellence in studies, &c., range from $10 to $100, and amount to more than $1,000 a year. Besides the degrees above mentioned, those of master of science and of arts and doctor of philosophy are conferred.—Although of recent origin, Cornell university is rich in collections and apparatus for study, which are accessible to all undergraduates. The university library, which is rapidly increasing in size, contains more than 37,000 volumes, including about 5,000 purchased in Europe in 1868, and embracing the more recent and valuable works on agriculture, the mechanic arts, chemistry, engineering, the natural sciences, physiology, and veterinary surgery; about 4,000 in history, English, French, German, and Italian literature, forming a portion of the president's library, but deposited for the use of the faculty and undergraduates; nearly 7,000, chiefly in the ancient languages and literatures, collected by the late Charles Anthon; the library of Franz Bopp of the university of Berlin, about 2,500 volumes, relating almost wholly to oriental languages and literatures and general philology; the libra-

ry presented by Prof. Goldwin Smith, comprising 3,500 works, chiefly historical; the publications of the patent office of Great Britain, numbering about 2,500 volumes; the White architectural library, a collection of over 1,000 volumes relating to architecture; the Kelly mathematical library, comprising 1,800 volumes and 700 tracts, presented by William Kelly of Rhinebeck; the Cornell agricultural library; and the library of the late Jared Sparks, purchased in 1872, and comprising upward of 5,000 volumes and 4,000 pamphlets relating chiefly to the history of America. Connected with the library is a reading room, where are found the leading American, English, French, and German periodicals, especially those relating to agriculture and the mechanic arts. The museum of geology and mineralogy, besides other important collections, contains duplicates of the state cabinet in Albany, the collection made by Prof. Hartt as geologist of the Agassiz expedition to Brazil, the mineralogical collection of Prof. Benjamin Silliman, jr., and the Ward collection of casts, comprising rare and important specimens in palæontology. In the museum of botany and agriculture are extensive and valuable collections of models, photographs, cereals, tools, implements, &c., illustrating the materials, processes, and products of agriculture and horticulture, and the various operations in veterinary surgery. The museum of zoölogy and physiology contains extensive anatomical and zoological specimens, valuable ornithological and conchological cabinets, and a collection of skeletons from the Anglo-Saxon cemetery at Frilford, England, with a variety of ethnological relics from the same tombs. There is also a museum of technology, comprising photographs and working models in brass, iron, and wood, illustrative of mechanical principles applied to machinery. There are also collections in chemistry and physics, and in the fine arts.—The endowment of the university consists of three distinct funds: 1, the fund of $500,000 given by Ezra Cornell, which is under the control of the trustees and produces an annual income of $35,000; 2, the college land scrip fund, consisting of the proceeds arising from sales of the lands granted by congress, which is in the custody of the state, and amounted on Sept. 30, 1872, to $473,402, producing an income of $30,512; 3, the Cornell endowment fund, which consists of the profits arising from the purchase by Ezra Cornell of the college land scrip, and the sale and location of the same, and from the sale of the lands. This fund is also in the custody of the state, and amounted on Sept. 30, 1872, to $128,596, with an income of $10,821. The whole endowment, therefore, at that date amounted to $1,101,999, and produced an income of $76,333. In 1873 this income, through additional sales of land, had increased to about $140,000, while the land remaining unsold amounted to about 420,000 acres, of which the proceeds are to be added to the college land scrip fund and the Cornell endowment fund. Besides these funds, the university holds property valued at $554,770, consisting of the university farm and farm buildings, valued at $55,000; university buildings, $323,770; library, $68,487; illustrated collections, $58,175; apparatus and models, $16,978; and furniture, tools, machinery, presses, &c., $32,360.—The establishment of Cornell university was effected through the bounty of the United States government and Ezra Cornell of Ithaca. In 1862 congress passed an act granting public lands to the several states and territories which might provide colleges for the promotion of agriculture and the mechanic arts. Under this act the state of New York received land scrip representing 989,000 acres of land, which was subsequently selected in the west. This amount was first appropriated conditionally by the legislature to another institution, but the stipulations of the contract not having been fulfilled, the entire proceeds of the land grant were transferred in 1865 to the Cornell university upon its compliance with certain conditions, of which the most important were that Ezra Cornell should give to the institution $500,000, and that provision should be made for the education, free of charge for tuition, of one student from each assembly district of the state. This requirement was fulfilled by Mr. Cornell, who subsequently gave upward of 200 acres of land with buildings as a site for the university and as a farm for the college of agriculture, besides the Jewett college in geology and palæontology, which had cost him $10,000. He has also made other donations amounting to upward of $100,000. The charter was granted by the legislature of New York in 1865, and bestows upon the university the income of the sale of the public lands granted to the state by congress for educational purposes; provides for the election of trustees and the reception of state students; and establishes the principles upon which the general organization of the institution is based. In commemoration of the act of incorporation the university keeps the anniversary of its signature by the governor, April 27, as a holiday under the title of "charter day." In accordance with the requirements of its charter, the institution was opened Oct. 7, 1868, with Andrew D. White (to whose efforts as a state senator the procurement of the charter is largely due) as president, who still (1874) retains the office. The total number of instructors the first year was 26, including 15 resident, 8 non-resident, and 3 assistant professors. Among the non-resident professors were Louis Agassiz, Goldwin Smith, James Russell Lowell, George William Curtis, and Bayard Taylor. About 350 students were admitted in 1868. At the end of the academical year 1868–'9, 9 students were graduated; in 1869–'70, 24; in 1870–'71, 40; in 1871–'2, 68; in 1872–'3, 95. Gifts of various kinds, including collections, money for building purposes, machinery, models, &c.,

amounting to more than $500,000, have been bestowed upon the university. All persons over 16 years of age, qualified to pass the prescribed examinations as to studies, may be admitted, the purpose of the founder being to "found an institution where any person can find instruction in any study." In 1872 the university accepted the offer of $250,000 made by Henry W. Sage of Brooklyn, N. Y., for the establishment in connection with the university of an institution for the education of women, to be called the Sage college of Cornell university.

CORNET-À-PISTONS, a musical wind instrument of metal, the mechanism of which enables it to give all the intervals of the chromatic scale as far as the low F sharp. It has a compass of about two octaves and two notes, though the extreme low and high notes of its scale are of hazardous utterance. There are cornets in C, B flat, A, A flat, G, F, E natural, E flat, and D. Those in A flat, A natural, and B flat are the best and the most correct in intonation, having fewer doubtful or bad notes than the others. That in C, the highest of all, is somewhat difficult to play. As to the relative pitch of this instrument with that of other brass instruments of its kind, the first low sound of the cornet in C is an octave above that of the trumpet in C, and two octaves above that of the horn in the same key. The cornet-à-pistons is not an instrument of much dignity of tone, in this respect falling below the trumpet; neither has it the nobility of the horn. When heard however in the orchestra, in combination with other instruments of its class, especially with the trombones, whose sonority reënforces its tone and takes away its trivial character, it produces excellent effects. It is useful also in rendering rapid diatonic or chromatic passages which are impracticable for either the trombones or horns.—A wind instrument named the cornet was formerly in use, but has given place to the hautboy. It consisted of a curved tube of brass, about three feet long, increasing in diameter from the mouthpiece to the lower end.

CORNHERT, or **Coornhert, Diederik,** a Dutch author, born in Amsterdam in 1522, died in Gouda in October, 1590. He was for a while steward in the service of a nobleman, and afterward learned the art of an engraver. In 1564 he was appointed secretary to the burgomasters of Haarlem, and assisted in preparing the way for the establishment of the independence of Holland. He was the author of the manifesto published by William prince of Orange in 1566, and for this he was afterward thrown into prison at the Hague. When he gained his liberty he was compelled to retire to Cleves, where he earned a livelihood as an engraver. He was recalled to Holland in 1572, and appointed secretary of state, but, having made himself obnoxious to the principal generals by his attempts to check the disorderly conduct of the army, was again exiled. He afterward returned, and though he offended many by his theological views, he finally died in peace in his native land. He wrote in defence of the conduct of the Dutch in rebelling against the king of Spain, asserting that in doing so they only obeyed the law of self-defence. He wrote a poem "On the Use and Abuse of Fortune," and is said to be the author of *Wilhelmus van Nassouwen*, a national song very popular in Holland. Just before his death he wrote an essay against putting heretics to death. His works were published at Amsterdam in 1630, in 3 vols. fol.

CORNIANI, Giovanni Battista, count, an Italian author, born at Orzi Nuovi in 1742, died in Brescia in 1813. He was president of the academy of Brescia, held high judicial offices in that city, and from 1807 in his native town, was one of the authors of the Italian civil code, and a delegate to the provincial congress at Milan. He wrote opera texts and tragedies; but his principal work is *I secoli della letteratura italiana dopo il suo risorgimento* (9 vols., Brescia, 1804–'13; 8 vols., Turin, 1854–'6).

CORNING, a post village and township of Steuben co., N. Y., on the New York and Erie, the Corning and Blossburg, and the Buffalo, Corning, and New York railroads, and on the Chemung river, 13 m. N. W. of Elmira; pop. of the township in 1870, 6,502; of the village, 4,018. It is pleasantly situated at the foot of a hill, and has communication by bridges with Knoxville and Centreville, on the opposite bank of the river. It has an extensive trade in lumber and coal, large quantities of the former being annually sent from here down the Susquehanna. A navigable feeder of the Chemung canal connects it through Seneca lake with the Erie canal. There are several factories, and two weekly newspapers.

CORN LAWS, laws regulating the trade in corn or breadstuffs. Such laws have existed in various forms, and still exist, in many countries; but the corn laws of England are most famous in our day, owing to the great agitation for their repeal, which was consummated Feb. 1, 1849. They were of ancient origin, and had in the times of Edward VI. and Elizabeth been designed to regulate the domestic trade as well as the foreign. In the reign of Edward VI. the "engrossing" of corn, or buying it in one market to sell in another, was made punishable by imprisonment and the pillory. By a statute of Elizabeth corn could be carried from one part of the kingdom to another by obtaining a license from the quarter sessions. In 1624 these laws regulating the internal trade were much modified; and in 1663 engrossing of corn was declared legal when the price did not reach 48*s.* per quarter. Although this last law worked well in many respects, the impolicy of such trade restrictions finally came to be acknowledged, and in 1773 the last remnant of these statutes was abolished. Immediately after the Norman conquest the exportation was prohibited, and this principle was adhered to till 1436, when a law was enacted allowing it

whenever the price of wheat should not exceed 6*s.* 8*d.* per quarter, and of barley 3*s.* 4*d.* In 1463 the importation was prohibited unless the domestic price should exceed the rates named in the law of 1436. In 1562 exportation was allowed when wheat was worth 10*s.* per quarter, and barley 6*s.* 8*d.* In 1571 it was enacted that wheat might be exported by paying a duty of 2*s.* per quarter, barley and other grain a duty of 1*s.* 4*d.*, when the home price of wheat was below 20*s.* and barley below 12*s.* In 1660, on the accession of Charles II., along with heavy import duties, the export duty of wheat was fixed at 20*s.* per quarter, with proportionate rates on other grains. In 1663 for these duties an *ad valorem* duty of 9 per cent. was substituted; as the exportation price of wheat was fixed at 48*s.*, the duty was thus made 5*s.* 4*d.* per quarter. In 1670 prohibitory duties were laid upon importation until the price should reach 53*s.* 4*d.*, while exportation was allowed until the home price should reach that rate. When above that price and below 80*s.*, importation was allowed with 8*s.* duty. In 1689, for the promotion of agriculture, a bounty of 5*s.* per quarter was paid on wheat exported when the price did not exceed 48*s.*, and of 2*s.* 6*d.* on barley or malt if the price did not exceed 24*s.*; and at the same time importation was prohibited. This system continued till 1773, when, prices having become very high, a law was enacted under the auspices of Edmund Burke, by which the introduction of foreign wheat was allowed, at a duty of 6*d.* per quarter, whenever the price reached 48*s.*, while the export bounty and exportation itself were to cease whenever the price rose to or above 44*s.* As this law prevented prices from rising with the increased demand, and as there was a general wish to become independent of foreign supplies, a law was passed in 1791 by which an import duty of 6*d.* was to be levied when the price was 54*s.*; when it was under 54*s.* and above 50*s.*, the duty was to be 2*s.* 6*d.*; and when it was under 50*s.*, the duty was to be 24*s.* 3*d.* per quarter, or in fact prohibitory. In 1804 a duty of 24*s.* 3*d.* was levied when the home price was 63*s.* or less; when it was from 63*s.* to 66*s.*, the duty was fixed at 2*s.* 6*d.*; and when it was 66*s.* or more, the duty was 6*d.* The official price was established by the average of 12 districts, into which the maritime counties of England had been divided; and in Scotland by the average of four maritime districts. These averages were taken four times a year. In 1814 the export bounty was abolished, leaving exportation unrestricted; and in 1815 an act was procured by the agricultural interest, after a fierce opposition from the manufacturing and commercial classes, fixing 80*s.* as the limit at which there should be no duty on importation. In 1825 a minimum duty of 1*s.* was levied when the price should be above 85*s.*, with a maximum duty of 17*s.* when the price was between 70*s.* and 80*s.* In that year the duty on wheat from the North American colonies was fixed for one year at 5*s.* without regard to the home price. In 1827 Mr. Canning attempted a reform of the corn tariff, and to give greater freedom to importation, but failed. In 1828 an act was passed fixing a minimum duty of 1*s.* when the price was 73*s.* or more, with a maximum duty of 23*s.* 8*d.* when the price was 64*s.*; the prices to be ascertained from actual sales in the principal towns. In 1839 the anti-corn-law league was founded, and the agitation for the total repeal of the duties commenced. In 1842 Sir Robert Peel's sliding scale was enacted, fixing a minimum duty of 1*s.* when the price was 73*s.* and over, and adding 1*s.* to the duty with each decrease of 1*s.* in the price, until the maximum duty of 20*s.* was reached whenever the price fell below 51*s.* In 1843 the duty on wheat from Canada was fixed at 1*s.* Finally, in 1846, Sir Robert Peel's famous free-trade measure was passed, seriously reducing the corn duties at once, and fixing them, after Feb. 1, 1849, at the nominal rate of 1*s.* per quarter on wheat and other corn, and 4½*d.* per cwt. on all kinds of flour and meal.

CORN SNAKE, the common name of the *coluber guttatus*, Linn. (genus *scotophis*, Bd. and Gd.). The head is narrow and elongated; and the snout obtuse; the neck is contracted, the body very long, and the tail small and tapering. The color above is reddish brown, with oblong spots of brick-dust color bordered with very dark brown; the sides are lighter with small spots; below, the color is silver-white, with black squares of various sizes irregularly



Corn Snake (Coluber guttatus).

disposed; below the vent is a longitudinal line on each side, formed by a black spot on each scale. In a specimen 4 ft. long, the head was 1⅛ inch, body 39 inches, and tail nearly 8, the greatest circumference being 4 inches; it attains a length of 6 ft. It conceals itself by day, and is generally seen early in the morning and about dusk; it enters houses, and is believed to devour chickens, as well as the small animals usually eaten by snakes. Its northern limit appears to be North Carolina. The abdominal plates are 126, the subcaudal scales 64.

CORNU, Sébastien Melchior, a French painter, born in Lyons in 1804. He studied with Ingres at Paris, and after protracted visits to Italy and the East established himself in that city. He has attained considerable eminence as a

painter of history, sacred and profane, genre subjects, and portraits. Among his chief productions are "Christ and the Doctors," "St. Anna instructing the Virgin," "The Crucifixion," and "The Surrender of Ascalon to Baldwin III." He was charged with the completion of the decoration of the church of St. Germain des Prés, interrupted by the death of Flandrin, and in 1862 was appointed director of the musée Napoléon III., then newly established in the Louvre. He has received medals of the first, second, and third classes, and is an officer of the legion of honor.

CORNUCOPIA (Lat. *cornu*, a horn, and *copia*, abundance), called also the horn of Amalthæa, and the horn of plenty, an emblem of riches and abundance. According to an ancient Greek legend, the infant Zeus was tended by the daughter of Melissus, king of Crete, and was nurtured upon the milk of the goat Amalthæa. He rewarded her care by breaking off one of the horns of the goat, and presenting it to her, endowed with the power of being filled with whatever was desired, whenever the possessor wished. According to Ovid, Amalthæa was the name of the daughter who presented the horn to Jupiter filled with fresh herbs and fruit. Among the Romans the cornucopia was the proper symbol of Fortuna, but other goddesses and Roman empresses are represented in statues bearing it on the left arm. The cornucopia appears on the most ancient Greek drinking vessels, and on many ancient coins, and the volutes of Ionic columns were often sculptured to represent it.

CORNWALL, a S. W. maritime county of England, bounded E. by Devonshire and on all other sides by the Atlantic; area, including the Scilly isles, 1,365 sq. m.; pop. in 1871, 362,098. Its E. boundary, except for a short distance, is marked by the river Tamar, which flows S. into Plymouth sound, a considerable indentation of the coast between Cornwall and Devonshire. Other indentations on the S. coast are Falmouth bay and Mount's bay. On the N. W. coast are St. Ives, Perran, and Padstow bays. The coasts are generally rugged, and at their angle is Land's End, the westernmost point of England, a promontory of granitic rock 60 ft. high. The country is hilly in some parts, especially in the east, where the two elevations, Brown Gilly and Brown Willy, are respectively 1,100 and 1,364 ft. high. There are many moors in Cornwall, and its appearance generally is bleak and dreary. Many of the valleys, however, are fertile and beautiful. There are several rivers, none large, having usually harborage at their mouths, and three navigable canals, which are used principally for the introduction of Welsh coal. The climate is moist, with a temperature of small variation. The winds are shifting and often violent. Corn and potatoes are the chief products of agriculture. There are valuable mines of tin and copper, situated mostly in the southwest. These mines number more than 300, and give employment to about 30,000 persons. In 1866 they produced 9,900 tons of tin, of the value of £870,000, and 6,551 tons of copper, value £600,770. The tin mines have been worked from a very remote period. The Phœnicians are believed to have visited them, and they were subsequently worked by the Carthaginians, the merchants of Marseilles, and the Romans. Grain tin and gold are found in alluvial deposits. Silver occurs with lead, and ores of manganese, bismuth, cobalt, and antimony are met with. Soapstone is quarried to some extent, and 7,000 tons of porcelain clay are annually shipped. Carpets and a few coarse woollens are the only manufactures. The pilchard fishery is carried on extensively at St. Ives, Mount's bay, and Mevagissey. The principal towns are Bodmin, the capital, Truro, Helston, Penzance, St. Ives, and Falmouth.—The name Cornwall is derived by some from *carn* (Celtic, rock) and Gaul or Waal, the Saxon name of the Britons; by others from the Latin *cornu*, Celtic *kern*, a horn, from the shape of that part of it which juts into the sea. It was early known to the Phœnicians and the Greeks. At the time of the Roman conquest it was occupied by tribes of the Cimbri and Damnonii. After the departure of the Romans the natives retained their independence till 680, when on the death of their last king, Cadwaladyr, the country was conquered by Ivar, son of Alain, king of Brittany, who was soon expelled by Kentwin, king of the West Saxons. The county has numerous remains of these early times. In 1337 Cornwall was made a dukedom, which is held by the eldest son of the British sovereign. In the civil war of the 17th century the people generally espoused the cause of Charles I., and Cornish troops distinguished themselves at Lansdowne and in the siege of Bristol. The Cornish language, a dialect of the Celtic, prevailed in the county up to the middle of the 17th century, and was partially spoken until the beginning of the present century.

CORNWALL. I. A post village and township of Litchfield co., Conn., 37 m. W. by N. of Hartford; pop. of the township in 1870, 1,772. The village is situated about 2 m. E. of the Housatonic railroad, which follows the course of the river of that name through the township. A foreign mission school was established here in 1818 for the purpose of qualifying converts from paganism to preach the gospel to their countrymen, and in 1820 it contained 29 pupils, of whom 19 were American Indians and 10 natives of Pacific islands. It was subsequently discontinued. **II.** A town of Orange co., N. Y., on the W. bank of the Hudson, 5 m. S. of Newburgh, containing the villages of Cornwall Landing and West Point; pop. in 1870, 5,989. "Idlewild," the former residence of N. P. Willis, occupies a lofty plateau above and N. of Cornwall Landing. The town is much frequented as a summer resort.

CORNWALL, Barry. See PROCTER, BRYAN WALLER.

CORNWALLIS, Charles, first Marquis and second Earl Cornwallis, a British general, born Dec. 31, 1738, died at Ghazepore, India, Oct. 5, 1805. He was educated at Eton and Cambridge, served in the seven years' war under Lord Granby, and succeeded to the peerage in 1762. An aide-de-camp and favorite of the king, he was made governor of the tower in 1770, but he nevertheless opposed the measures which led to the American war. His regiment, however, being ordered to the scene of war in 1776, he served with activity, at first as major general under Howe and Clinton in the Jersey campaigns, afterward in the expedition to the Chesapeake, and commanded the detachment which took possession of Philadelphia, Sept. 24, 1777. He was engaged in the siege of Charleston in 1780, and after its capture was left with about 4,000 troops in command of South Carolina. Here he gained a victory over Gen. Gates at Camden, Aug. 16, 1780, and a second less decided over Gen. Greene, at Guilford, March 15, 1781. But, unable to hold the country, he entered Virginia in the course of the spring, where, although superior to any opposing force, he could obtain no decided advantage. At length, unable to extricate himself by sea, owing to the superiority of the French fleet, he shut himself up in Yorktown behind strong intrenchments. Here he was surrounded and besieged by the American and French armies and the French fleet, and obliged to surrender with his whole force, Oct. 19, 1781. This was virtually the end of the war, and soon led to that change of the English ministry which brought about the peace, and the recognition of American independence. He served again in 1784–'5 as governor of the tower, and in 1786 was appointed governor general and commander-in-chief of Bengal. Soon after his arrival the English power became engaged in a conflict with Tippoo Sahib, in which its existence was at stake. He took the field in person in 1790, penetrated Tippoo's dominions, and won a series of victories by which the British authority in India was finally established. The war was brought to a close in two campaigns, in which the power of the sultans of Mysore was broken, and a treaty made by which, in order to save the capital city Seringapatam, half of their dominions was surrendered to the British. In 1793 Lord Cornwallis returned to England, and in 1798 was made lord lieutenant of Ireland, then in a very distracted state. He restored tranquillity, and repressed the excesses of the Orange party, acquiring the good will of the Irish. As minister plenipotentiary to France he signed the peace of Amiens in 1802, and having been again appointed governor general in the service of the East India company, whose affairs had fallen into disorder, he arrived in Calcutta in August, 1805, and was soon attacked by the disease of which he died. His correspondence, edited by Ross, has been published (3 vols., London, 1859).

CORO. I. A state of the republic of Venezuela, extending along the Caribbean sea from lon. 68° 30′ to 71° 40′ W., and bounded S. W. by Maracaibo and S. by Barquisimeto and Carabobo; area, 11,197 sq. m.; pop. in 1870, 72,321. On its N. coast the peninsula of Paraguana is connected with the mainland by a long narrow isthmus, forming on the W. the bay of Coro. It is drained by many small rivers emptying into the Caribbean sea, the principal of which is the Tocuyo, navigable 120 m. from its mouth. The soil is dry and sandy and generally fertile, but is little cultivated. A large part of the state is covered with forests. The chief products are coffee, cacao, maize, and plantains. Mules, sheep, and cattle are raised to some extent, the plains furnishing abundant pasturage. The population consists mostly of Indians, negroes, and mixed races. **II. Santa Aña de,** the capital of the state, situated at the head of the bay of Coro, in lat. 11° 24′ N., lon. 69° 46′ W., 190 m. W. N. W. of Carácas; pop. about 6,000. The streets are regular, but the town is poorly built and has no public edifices worthy of mention. The surrounding country is sandy and sterile, and the climate is hot and dry. The harbor is not very safe, but is much frequented, there being a considerable trade with the West India islands. Mules, goats, hides, sheepskins, and cheese were once exported in large quantities, but the business has fallen into decay. Coro was founded in 1527, and was the seat of the Spanish government of the province till 1636, when it was superseded by Carácas.

COROLLA (Lat. *corolla*, a little crown), in botany, the inner of the two floral envelopes, forming the most showy part of the blossom, composed either of one entire piece, when it is monopetalous, or of several parts or leaves termed petals, when it is polypetalous. It is usually of delicate texture and bright color. It surrounds the stamens and pistil, and is surrounded by the calyx. Its principal function seems to be to protect the organs of fructification, which it at first completely encloses, and it withers and falls off when this service is no longer needed. The features of the corolla are important elements in all systems of botanical classification, and are the basis of Tournefort's.

COROMANDEL, Coast of, a name applied to the W. shore of the bay of Bengal, and properly confined to the seaboard of the British districts of Tanjore, Arcot, Chingleput, and Nellore, extending from Point Calimere, lat. 10° 17′ N., lon. 79° 56′ E., to Gondegam, lat. 15° 20′ N., lon. 80° 10′ E. The term is often applied, however, to the whole coast, as far north as Balasore. The places on this coast principally visited by shipping are Madras, Carikal, Cuddalore, Pondicherry, and Pulikat. It has no harbors in which large vessels can ride in safety at all times, and is constantly swept by a heavy and dangerous surf. Landing is generally accomplished by means of native boats of a peculiar construction. The shore is open

and sandy, and during the hot winds resembles a vast wilderness.

CORONACH, a lamentation at funerals, formerly prevalent throughout Scotland and Ireland, and still common in parts of those countries. The *ὀλολυγή* of the Greeks and *ululatus* of the Latins designated similar practices among the classical nations; and the resemblance of these words to the common Celtic cries on funeral occasions, *uloghone* and *hullulu*, indicates an etymological affinity. Combined cries of lamentation were intermingled with expostulations and reproaches bestowed upon the deceased for leaving the world, and the wailing was continued by a train of females which followed the corpse to the burial.

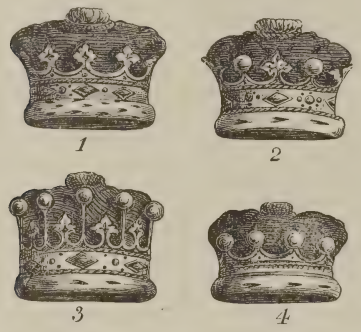
CORONADO, Francisco Vasquez de, an explorer of New Mexico and the countries on the river Gila. On the arrival in Culiacan of Cabeça de Vaca from his journey from Florida in 1536, when he brought news of the existence of half-civilized tribes far to the north, living in populous cities, acquainted with the arts, and possessing quantities of gold, silver, and precious stones, an expedition was sent out under Marco de Niza, in 1539, to explore the regions referred to. Upon its return a second expedition was fitted out under Coronado, which departed from Culiacan, on the Pacific coast, in April, 1540. He passed up the entire length of what is now the state of Sonora to the river Gila. Crossing this, he penetrated the country beyond to the Little Colorado (called by him Rio del Lino), and paid a visit to the famed cities of Cibola mentioned by Cabeça de Vaca and De Niza. In the kingdom were seven cities, but he declares that there was no truth in the reports of his predecessor regarding their wealth. The country, he says, was too cold for cotton, yet the people all wore mantles of it, and cotton yarn was found in their houses. He also found among this people maize, Guinea cocks, peas, dressed skins, &c. From Cibola Coronado travelled eastward, visiting several towns, similar to the existing villages of the Pueblo Indians. He proceeded eastward to the Rio Grande, and from there 300 leagues to the city of Quivira, the ruins of which are well known, being near lat. 34° N., in a direction N. E. of El Paso, about 170 m. distant. There he found a temperate climate, with very good waters and an abundance of fruit. There was no cotton seen or garments of it used, the people clothing themselves in skins. On his way back in March, 1542, Coronado fell from his horse at Tiguex, near the Rio Grande, and is said to have become insane. The viceroy Mendoza was much annoyed at the return of the expedition, which was fitted out at great expense. He wished a colony to be founded in the distant regions visited, but the commander of the expedition did not deem it proper to leave any of his party in so poor a country, and at so great a distance from succor.

CORONADO DE PERRY, Carolina, a Spanish poet and novelist, born at Almendralejo, Estremadura, in 1823. She first attracted notice by a poem called *La palma*. In 1843 she published at Madrid a collection of verses, and another in 1852, embracing a wider range of subjects. Among her prose works are *Sigea*, a novel founded on the adventures of Camoëns, *Jarilla*, *Paquita*, and *La luz del Tejo*. About 1853 she married Horatio J. Perry, American secretary of legation at Madrid. One of her poems, *El pajaro perdido*, has been translated by William Cullen Bryant.

CORONER, an officer so called from *coronator*, because originally his functions were for the most part those of a conservator of the peace, and in other respects of a ministerial deputy of the crown. The office is of very great antiquity in England, and at an early period was held by men of high dignity. The chief justice of the king's bench was called by Coke the chief coroner of the kingdom, and as such he could perform the duties of the office if he chose in any part of the realm. It was the custom from a remote period to elect several coroners in every county, which was done by the freeholders at the county court. By a statute in the reign of Edward I. it was enacted that none but lawful and discreet knights should be chosen; but, according to Blackstone, "through the culpable neglect of gentlemen of property the office had fallen into disrepute, and got into low and indigent hands." More recently, however, the office has been generally held by men of respectability. The duties of coroner are ministerial and judicial. In his ministerial capacity he may serve writs when the sheriff is incompetent to act, or when the process is against the sheriff himself; he may also by virtue of his office apprehend a felon within his county without warrant. His chief judicial function is to inquire, when any person is slain or dies suddenly or in prison, concerning the manner of his death. This must be *super visum corporis* (within sight of the body), and by a jury summoned for that purpose over whom the coroner presides. If upon the inquest any one is found guilty of homicide, he is to be committed to prison by the coroner, and the inquisition with the evidence is to be returned to the king's bench. Another part of his duties is to inquire concerning shipwrecks, and who is in possession of any of the property which may have been saved. In this country the office exists in all or most of the states, and the duties are generally the same as in England. There is no similar office under the federal government.

CORONET (Lat. *corona*, a crown), a crown worn by princes and noblemen. It was not known in England prior to the reign of Henry III., and the oldest remaining representation of one is on the monument of John of Eltham, second son of Edward III., who died in 1334. All the coronets at present worn by the British nobility surround caps of crimson velvet edged with ermine. That of the prince of Wales was anciently a circle of gold, with four crosses pat-

tée on the edge between as many fleurs de lis; but since the restoration it has been closed with one arch, adorned with pearls, and surmounted by a mound and cross. That of a duke is enriched with precious stones and pearls, and adorned with eight large strawberry leaves. That of a marquis is set round with four strawberry leaves interposed between as many pearls. That of an earl has eight pearls alternate with



CORONETS.—1. Duke's. 2. Marquis's. 3. Earl's. 4. Baron's.

as many strawberry leaves, but set on pyramidal points much above them. A viscount's is surrounded only by an indefinite number of pearls. The baron's coronet, granted by Charles II., has six pearls at equal distances around it. In England coronets are worn at the time of a coronation by peers and peeresses. On the continent they are not worn, but merely represented with other heraldic insignia.

COROT, Jean Baptiste. See supplement.

CORPORAL (Ital. *caporale*, from Lat. *caput*, a head), the lowest officer in a company of infantry, between a private and a sergeant. He does duty in the ranks as a private, but has charge of a squad at drill, and places and relieves the sentinels.

CORPORALE (from Lat. *corpus*, a body), in the Roman Catholic and Greek churches, the fine linen cloth extended upon the altar, on which the priest deposits the elements in the sacrament of the eucharist. It is regarded as representing the shroud in which the body of Christ was enveloped after his death. From its sacredness it was sometimes touched by a person taking an oath, to give greater solemnity to the act; whence the name of corporal oaths.

CORPORATION, an artificial legal entity, established by law, composed of one or more persons, with certain powers and functions to be exercised in the corporate name, and continued by a succession of members. Blackstone and most other writers attribute the honor of inventing these artificial beings entirely to the Romans, and refer their original to the time of Numa, who, according to Plutarch, finding upon his succession the city torn to pieces by the rival factions of Romans and Sabines, thought proper to subdivide the two into many smaller ones, by instituting separate societies of every trade and profession. But this, if not fabulous like most which has been reported of that period, would seem to be a mere classification of the people without any of the essential incidents of a corporation. The greater division into patricians and plebeians (which grew up by a natural course rather than by any public enactment) had perhaps as much of the corporate character. The sacred orders (also supposed to have been instituted by Numa) of *pontifices*, *augures*, *feciales*, and others, might with more propriety be called corporations; yet these were all constituents of the municipal government, and were in no other sense corporate than was the senate. The *universitates* or *collegia* of the civil law were rather associations than corporations. (See COLLEGE.) The true original of corporations is to be found in the middle ages, when cities, towns, fraternities of tradesmen, and the like, obtained charters from feudal sovereigns of certain privileges and immunities, sometimes for the protection of personal liberty, and sometimes for the advantage of trade, the latter being somewhat in the nature of a monopoly.—Corporations are either aggregate, that is, composed of two or more persons at the same time; or sole, when they consist of one member only at a time, as in the case of the English bishops. They are also divided into ecclesiastical, or those which are created for the furtherance of religion and perpetuating the privileges of the church; lay, or those created for secular purposes; and eleemosynary, or those created for charitable purposes, using that term in a broad sense, which will include means of instruction, &c. A further classification is into public, or those which are formed as instruments or conveniences of government, as cities, villages, &c.; and private, or those which are created for the benefit of the corporators, and in which the public have only an incidental interest. Under the civil law corporations appear to have been created by the voluntary association of members, but the consent of the government in some form is always essential. In England the prerogative of creating corporations was in the king, who granted a charter for the purpose; but charters may be granted by parliament also, and in modern times this is the ordinary course. Corporations may also be established by prescription, which supposes a charter to have once existed; and there may be corporations by implication, where powers are conferred upon individuals to the exercise of which corporate capacity is essential. (Dyer's Rep., 400; 10 Barnwell and Cresswell, 349.) In the United States corporations are created by special charter of the legislature, or formed by voluntary association of members under a general law. In some states special charters are forbidden by the constitution.—The incidents of a corporation are, to have a corporate name by which it is known in the law, and a corporate seal, under which in general its business is transacted; to have capacity

to hold property for corporate purposes, to sue and be sued, to make by-laws in furtherance of the purposes of its incorporation, and to continue in perpetuity unless restricted to a specified period of time by its charter. The by-laws of a corporation must be reasonable, and in harmony with the general laws of the commonwealth. Corporations in the transaction of business are subject to the same rules and responsibilities as natural persons; and in respect to their officers and agents they occupy the position of master to servants, and must respond to third persons for the injuries caused or done by such officers and agents while transacting their business. Every corporation is under the supervision of some visitor, who generally in England is the king, except in the case of inferior ecclesiastical corporations, of which the ordinary is visitor, and of corporations endowed by a founder, in which case he and his heirs are visitors. In the United States the legislature possesses in general this right of supervision. Corporations may be dissolved in several ways: 1. By the death of all their members without successors; but this mode of extinction can seldom occur. 2. By surrender of the charter by the corporators. 3. By the repeal of the charter; but this, in the case of private corporations, is not admissible in the United States unless the right of repeal was reserved when the charter was granted; such a charter being held to be a contract, and the states being prohibited by the constitution of the United States from violating the obligation of contracts. To obviate this difficulty, some states by their constitutions expressly make all charters subject to repeal. 4. By judgment of some competent court pronouncing a forfeiture of corporate rights for misuser or nonuser of franchises. It is a tacit condition of the grant of every corporate franchise that the corporators shall fulfil the purpose or design of their incorporation, and not abuse the franchise conferred; but a forfeiture for neglect or abuse can only be declared in a public proceeding instituted for that express purpose, and cannot be taken advantage of by private persons in suits where the corporate existence may come collaterally in question. Formerly the law was very strict in requiring corporate business to be done under the corporate seal; but now these bodies are permitted to contract like natural persons, and the same civil remedies may be had against them. For some wrongs, as the creation or continuance of a nuisance, criminal proceedings may also be had against them.

CORPULENCE, a state of excessive fleshiness, due not to unusual muscular development, but to an excess of fatty deposition in the adipose tissues of the body. (See Adipose Tissue.) The excessive accumulation of fat which constitutes corpulence is influenced by three principal conditions: 1, the rate of physiological waste involved by respiration and exercise; 2, constitutional tendency; 3, character of diet. In rest the consumption of material for muscular force falls to a minimum. Darkness, which favors nervous quiet, sleep, which checks interstitial waste, and a high temperature, which lowers the demand for vital heat, and at the same time rarefies the air and reduces the respiratory activity, are also favorable conditions for laying on adipose, as those who fatten animals for market well understand. On the contrary, bodily activity is unfavorable to corpulence; it is accompanied by quickened respiration, by which oxygen is more rapidly introduced, destructive changes increased, and carbon, the main constituent of fat, is carried off by the carbonic acid of the expired breath. A low temperature still further favors this tendency by condensing the air respired, so that more oxygen is taken into the system. The later investigations in physiological dynamics throw still further light upon the destruction of fat by exercise. According to the views at first maintained by Liebig, all muscular force was attributed to the chemical metamorphosis of the nitrogenous tissues. But later quantitative investigations into the amount of force expended, and the amount of accompanying waste, have shown that the latter is insufficient to explain the former; a surplus of force remains to be accounted for. The principle of the correlation of forces here comes into play, in the conversion of heat into muscular motion; and the combustion of fat being a copious source of heat, we see how free bodily exercise is at the expense of fat, and therefore reduces corpulence. It is probable indeed that the source of muscular power assigned by Liebig (actual metamorphosis of tissue) plays a much less important part in sustaining bodily activity than has been hitherto supposed. Constitutional predisposition is moreover a powerful element in the case, as in some the tendency to leanness is so inveterate that neither rest nor an excessive oleaginous diet will overcome it, while in others the plethoric predisposition is so strong that it is difficult to counteract it by exercise. This so-called predisposition to leanness or obesity depends upon the varying capacity of digesting and assimilating the proximate elements of food, and this brings us to the most potent of the influences by which corpulence may be controlled, which is that of diet. (See Banting.) It was believed until late in the present century that the chemical elements are capable of transmutation in the domain of the vital forces; but it is now established that the living system has no such power. It cannot convert one element into another. It cannot generate the materials of which fat is composed; they must be furnished in food. Yet the organism has a very considerable power of transforming alimentary compounds, and may even change them from one type to another if the requisite elements are present. The fat series, embracing all the oily elements of diet, are almost pure hydrocarbons, having but a very small proportion of oxygen and no nitrogen. The sugars, gums,

and starches are hydrates of carbon, containing a much larger proportion of oxygen and also no nitrogen. Starch is easily changed into sugar, and sugar may be converted into a fatty compound by loss of oxygen, a change that is often effected artificially in the laboratory. Corpulence is due to an excess of hydrocarbon in the system, and is of course most directly favored by oleaginous food, such as fat meat, butter, gravies, milk, nuts, and Indian corn, which contains a large proportion of oil. But although these fatty foods are excluded from the diet, the hydrocarbons may still be elaborated in the system out of the starch and sugar of bread, potatoes, rice, tapioca, arrowroot, and various other vegetables, fruits, and roots. If these be freely indulged in, corpulence can be promoted under a regimen which strictly excludes the fatty constituents of diet. The predisposition above referred to consists in constitutional tendencies to carry on these transformations. Leanness may be due to a low power of digestion, to a defective capacity of assimilating fats, or a want of ability to turn starch and sugar into fat; while on the other hand strong digestion and vigorous assimilation may tend to produce a surplus of oily material which remains unconsumed. Alcoholic stimulants, which quicken the vital processes, increase digestion, and perhaps furnish hydrocarbon for respiration, are generally favorable to the deposit of fat. Physiologists also assert that the free use of aqueous drinks is promotive of fattening. The most effectual way to prevent corpulence, therefore, is by a regimen that rejects all those substances that are convertible into fat. If this practice is strictly pursued, it is certain to reduce obesity. It may be necessary to live upon an almost exclusive nitrogenous diet, as the azotized principles fibrine, albumen, and caseine, which go to renew the waste of the tissues, are not convertible into fat. A purely nitrogenous diet, however, would be fatal, and is impossible with the employment of ordinary foods. Aliments that are mainly nitrogenous are still associated with small but variable proportions of starchy and oily principles. A normal diet, as indicated by Liebig, requires the proportion of tissue-forming to respiratory principles to be in the ratio of 1 to 5 or 6. A diet for reducing corpulence will simply reduce the non-nitrogenous substances much below this standard. A strict regimen of lean meat, lean fish, cheese, peas, beans, cabbage, turnips, and acidulous fruits which are low in sugar and starch, if thoroughly carried out, is certain to diminish corpulence. It is proper, however, to state that according to the latest physiology the fats have a very important function in promoting the healthy nutrition of the nitrogenous elements. Consumption is held to consist in the defective assimilation of pulmonary tissue, and an oleaginous diet is prescribed as a remedy for this malady. Cod-liver oil is administered, not because it has any specific virtue in curing consumption, but because it generally proves easily digestible when other fatty substances fail to be freely assimilated.

CORPUS CHRISTI (Lat., the body of Christ), a festival of the Roman Catholic church, celebrated on the Thursday after Trinity Sunday. It is called by the French *Fête-Dieu*, feast of God. The Catholic church holds that the proper time of the festival is Thursday, the eve of Good Friday, because on the night before his death Christ instituted the eucharist; but as the sadness begotten by the commemoration of Christ's death is supposed to absorb every other feeling during Holy Week, so the first Thursday after the paschal season is chosen to celebrate with befitting solemnity the real presence of Christ in the sacrament. Hence the procession in Rome and in all Catholic countries, in which the consecrated host is carried through the decorated streets and public places. The first decree enjoining a separate festival was that of a synod held in Liége in 1246. Pope Urban IV. in 1264 commanded its observance by the whole church, placing it on the same footing as the solemnities of Christmas, Epiphany, Easter, and Pentecost.

CORPUS CHRISTI, a post village and the capital of Nueces co., Texas, on the neck of the peninsula which separates Corpus Christi and Nueces bays, 178 m. S. by E. of Austin; pop. in 1870, 2,140, of whom 288 were colored, and 707 of foreign birth. It enjoys an active trade, and has regular steamboat communication with New Orleans. The business part of the town is situated at the foot of a bluff from 80 to 100 ft. high, the upper part of which is occupied by pleasant dwellings. It has a good harbor. Before the Mexican war, the American army under Taylor was encamped here from August, 1845, to March, 1846.

CORPUS JURIS. See Civil Law.

CORREA DE SERRA, José Francisco, a Portuguese naturalist, born at Serpa in Alemtejo in 1750, died at the baths of Rainha in 1823. He was educated in Rome and Naples, was admitted to holy orders, returned to Portugal in 1777, and in 1779 was made perpetual secretary of the academy recently instituted at Lisbon. He collected cabinets of natural history, especially of botany, established a laboratory for scientific research, and prepared for the press numerous unpublished documents relating to the history of Portugal. Accused before the inquisition, he escaped to Paris in 1786, but was permitted to return to Portugal after the death of Pedro III. At Paris he had been intimately associated with the naturalist Broussonnet, and he became the host of the latter when he fled in disguise from the reign of terror to Lisbon. Endangered by the detection of Broussonnet, he took refuge first in Gibraltar and then in London, where he arrived in 1796. He was Portuguese counsellor of legation at Paris from 1802 to 1813, when he sailed to the United States, where he continued his scientific studies, and in 1816 be-

came minister plenipotentiary of Portugal. He was recalled to Portugal on the promulgation of the constitution of 1820, and made minister of finance. His most important writings are contributions to the *Biographie universelle*, treatises on the physiology of plants, *Archives littéraires de l'Europe*, *Sur l'état des sciences et des lettres en Portugal*, *Sur l'agriculture des Arabes en Espagne*, *Sur les vrais successeurs des templiers*, an article on Europe in the "North American Review," and *Collecçao de livros ineditos de historia portugueza* (4 vols. fol., Lisbon, 1790–1816).

CORRECTION OF THE PRESS, the indication of errors and defects in a printed sheet, with a view to their removal by the compositor. The first impression taken from the types is termed a proof, and is corrected first by the printer's reader, who points out the faults in the compositor's workmanship, and afterward by the author or editor, who indicates final alterations in language, orthography, and punctuation. The changes to be made are indicated by marks on the proof, known as printers' signs, which with very slight variations are universally recognized in printing houses. The most important of these are the following: Three parallel lines under a word show that it is to be printed in large capitals; two parallel lines, that it is to be in small capitals; and a single line, that it is to be in Italics. As the compositor's attention must be directed to any change in the text by some sign upon the margin, the words *caps*, *sm. caps* or s. c., and *Ital.* are written on the margin opposite to the lines which correspond to them. If a word printed in Italics is to be changed to Roman letters, a line is drawn under it, and the abbreviation *Rom.* written in the margin. When a corrector, after having changed or struck out a word, decides to let it remain as it was, he makes dots under it, and writes *stet* (Lat., let it stand) in the margin. An omitted word or letter is marked for insertion by being written in the margin opposite to a caret (∧) in the text at the place where the omission occurs. An omission too long for the side margin may be written at the top or bottom of the page, or on a sheet of paper attached to the proof, and connected with the caret by a line. An omitted hyphen or dash is marked for insertion by being enclosed between two parallel lines in the margin. When a word or letter is designed to be struck out from the text, a line is drawn through it and the character ℌ (for the Lat. *dele*, take out) is made in the margin. To change one word for another, draw a line through the printed word and write the intended word opposite in the margin. When two words are printed too closely together, a caret is made beneath the place where they should be separated, and the sign ⁜ written in the margin. Syllables improperly separated are joined by a horizontal parenthesis, as *er*‿*ror*, which is also to be made in the margin. An inverted letter is shown by a stroke under it, and by the sign ϑ in the margin. Omitted quotation marks are indicated by carets in the text, and by the characters ⁘ and ⁘ in the margin. When the punctuation requires to be altered, a caret is made in the text, and the desired point inserted in the margin; the period is enclosed in a circle, and the other points have a perpendicular stroke after them. When two letters or words are transposed, a curved line is drawn, running above the first and beneath the second, and the letters *tr.* are written in the margin. The sign ¶ in the margin, with a caret in the text, shows the place where a new paragraph is to be begun. If an erroneous break into paragraphs has been made, let a line curve from the end of one paragraph to the beginning of the next, and *No* ¶ be written in the margin. Attention is called to a defective letter by a stroke under it and a cross (×) opposite; and to crooked words or lines by strokes above and below them, and corresponding parallel strokes in the margin. Letters too large or too small are underscored and indicated by the letters *w. f.* (wrong font) in the margin. The attention of the author or editor is called to obscurities of language, words illegible in the "copy" (manuscript), doubtful statements, &c., by underscoring them and writing *qu?* or *qy?* or (*?*) in the margin.—Very rare qualifications are requisite to be an excellent corrector of the press, or proof-reader. Besides a familiar knowledge of the language in which the work is written, and of the technicalities of the typographical art, which is essential, and extensive and accurate information on general subjects, which is constantly useful, there is especially demanded an extreme precision in the habits of the eye. Hence the term "typographical eye," which implies the power of at once perceiving all the letters of which each word is composed, grasping the sense of each sentence, and following the succession of ideas through a paragraph or a chapter. In the period immediately following the discovery of printing, publishers were generally eminent scholars, and either corrected the proofs themselves or were assisted in the task by the most learned men of the time; and several of the early editions of the Scriptures and classics are celebrated for their freedom from typographical errors. Giovanni Andrea, bishop of Aleria, and secretary of the Vatican library, was corrector of the press for Sweynheim and Pannartz, the first printers at Rome, about 1468–'74, and exerted his influence in their behalf with Pope Sixtus IV. The learned Hellenist Camotius corrected the Aldine edition of Aristotle, in 5 vols., Venice, 1495–'8. Musurus assisted the eldest Aldus in correcting his edition of Plato (1513), and in the preface Aldus offered a gold coin for every mistake that should be discovered (*mutare singula errata nummo aureo*). The proof-readers of Plantin, who published his first work at Antwerp in 1555, and whose editions were famous for their beauty and correctness, were the distinguished schol-

ars Gheesdal, Pulman, Giselin, Kilian, and Raphelingus. The last declined the professorship of Greek at Cambridge, preferring to correct texts of the oriental languages, but afterward became at the same time head of a printing establishment at Leyden and professor of Hebrew in that city. Kilian, who corrected proofs for 50 years, wrote a pleasant poetical apology for the *corrector typographicus*, in which he reproached authors for the carelessness and deformity of their manuscripts. The Stephenses at Paris often corrected their own publications, but were assisted also by numerous erudite proof-readers. A poet of the time describes the interior of that learned establishment, in which the correctors and even the children and servants spoke in Latin. Robert Stephens and Plantin both often exposed publicly the sheets of a work, offering a reward to whosoever would show a fault. Erasmus corrected many proofs for his publisher, Froben of Basel; and yet such unlucky mistakes stole into some of his own works, that he once declared that either the devil presided over typography, or there was diabolic malice on the part of compositors. In a paraphrase of Matt. xvi. (1524), he spoke of Christ as *singulari more filium Dei.* But instead of *more* there appeared in the text *amore*, and the faculty of theology at Paris immediately declared the proposition a Nestorian heresy. Erasmus, however, was able to prove his orthodoxy by producing a copy of a previous edition, in which the passage was correctly printed. Other early and learned correctors of the press were Campanus, ex-bishop of Teramo, who served Ulrich Gallus at Rome; Chalcondyles, the exiled Greek, who corrected the first edition of Homer, and the first large work in Greek, Florence, 1488; Egnatius, professor of belles-lettres at Venice, and proof-reader for Aldus; Œcolampadius, professor of theology, reformer, and proof-reader for Cratander at Basel; Friedrich Sylburg, who corrected the editions of the classics published by Wechel, and also those by Commelin; Turnebus, royal printer of Greek books in France, instructor of Henry Stephens, and a friend of the most illustrious scholars of his time; and Cruden, the author of the concordance to the Bible.

CORREGGIO, Antonio Allegri da, an Italian painter, born at Correggio, near Modena, in 1494, died there, March 5, 1534. His father Pellegrino Allegri, a tradesman in moderate circumstances, caused him to be instructed in various branches of polite learning, and his uncle, Lorenzo Allegri, an artist of tolerable ability, taught him the rudiments of painting. His first regular instructions probably were received in the school of Andrea Mantegna, continued by his son Francesco, in Mantua, whence he acquired his wonderful skill in foreshortening. Francesco Bianchi Ferrari is also said to have been one of his masters, and the works of Leonardo da Vinci exercised an important influence on him. He never visited Rome, never studied the antique, unless from such specimens as the cities of northern Italy contained, and seems never to have had intercourse with the great painters of the age, except through their works. Yet by the force of his individual genius he created a manner entirely original, in which movement, variety, and the most delicate gradation of light and shadow, are the principal elements, and in the art of chiaroscuro surpassed all former artists. In 1518 Correggio, having already acquired some reputation as an artist, was invited to Parma to paint a saloon in the convent of San Paolo for the abbess. The subjects were selected from ancient mythology, and the groups of scantily draped gods and goddesses, of graces, nymphs, satyrs, and fauns, were represented with a fulness of life, gayety, and grace of which the severer ideal of contemporary masters had scarcely conceived. The reputation which this work gained for the artist procured him in 1520 the commission to execute the frescoes on the cupola of San Giovanni in Parma. He painted the "Ascension of Christ," who appears soaring up to heaven, while below, the apostles, seated on clouds, are watching his departure. In 1525, on the invitation of Duke Federigo Gonzaga, he went to Mantua, where he painted a celebratad series of mythological subjects: "Leda and the Swan," and "Jupiter and Io," now in the Berlin gallery; "Danaë," in the Borghese gallery in Rome; "Jupiter and Antiope," in the Louvre; and "The Education of Cupid," in the British national gallery. The subjects, appealing to the artist's feeling for grace and the expression of tender and voluptuous emotion, were executed with felicity, yet without grossness. The "Jupiter and Io," however, which was once in the possession of Queen Christina of Sweden, having passed into the Orleans collection, the son of the regent duke ordered the face of Io to be cut out and burned. It was afterward skilfully restored by the French artist Prud'hon. In 1526 he began his celebrated fresco in the duomo of Parma. In the centre of the dome he represented the Assumption—the Madonna borne up to heaven by an innumerable throng of rejoicing angels, while the Saviour descends to meet her; below are the apostles and evangelists. This is esteemed the masterpiece of Correggio, and Titian when he first saw it said, "If I were not Titian, I would be Correggio." Some of the cartoons of this work were accidentally discovered in a garret in Parma, and are now in the British museum. Upon its completion in 1530, Correggio returned to his native town, where he passed the remainder of his life. He died of a malignant fever after a few days' illness.—Correggio's works are not so numerous as those of some painters, but nearly every one is a masterpiece. The famous picture of the Nativity, in the Dresden gallery, called the *Notte*, in which the light proceeds from the head of the infant Sa-

viour, shows his command over the stronger contrasts of light and shadow, as well as his utter carelessness in drawing the subordinate parts of his pictures; while in his "Mercury instructing Cupid," the gradations are so fine that the shadows seem mutable and aërial, as if between the eye and the colors. The reading Magdalen, in the Dresden gallery, has perhaps been multiplied through engravings and copies beyond any other picture. Among other celebrated pictures are the St. Catharine in the Louvre, the St. Jerome in Parma, the St. George in Berlin, and the "Zingarella" Madonna in Naples. Correggio probably had no pupils, unless the persons who assisted him in executing his frescoes can be called such; but his imitators, who formed what was called the school of Parma, were numerous. Among the latter, the most celebrated was Parmigianino. His son, Pomponio Allegri, followed his father's style, but acquired no great reputation.

CORRELATION OF FORCES, and **Conservation of Force,** terms now used to express certain relations among the forces of nature which have been discovered by modern physical investigation. The view is that the various forms of force are mutually convertible into each other, while at the same time power, like matter, is indestructible, its total amount in the universe being conserved, or remaining perpetually unchanged. The principle is described by Helmholtz as "a new and universal natural law," and by Faraday as "the highest law in physical science that our faculties permit us to perceive." Two profound errors long prevailed in regard to the workings of nature. The first was that the material elements were transmutable into each other, which led to the search for the philosopher's stone and the art of making gold. The second was that force could be spent, destroyed, or annihilated, and could be created and come again into existence out of nothing; and this led to the pursuit of the perpetual motion. Before science arose with its rigorous investigations, these were far from being irrational beliefs. When but four elements were known, fire, air, earth, and water, the changes of nature seemed to be little else than transmutations of substances. Such facts as combustion, by which solid fuel dissolved in smoke and left ashes; the rusting of metals, by which they seemed to become new substances; the absorption of water by quicklime, by which it was apparently changed into earth; and the extraction of metals from ore by heat—all of which were familiar before chemical science arose—were only explicable by the idea of the transmutation of material elements. To produce gold from baser metals seemed therefore to be in accordance with the possibilities of nature, and was long an object of experiment by the alchemists. On the other hand, force, or that which produces the movements of matter, was constantly seen to be expended and to disappear. Bodies set in motion always came to rest, the motion apparently ceasing. Beasts and men were in action all their lives without being wound up or set in motion, as food was not understood to be a source of power, and the development of force out of itself or out of nothing appeared to be the essence of organic life. The ever-revolving planets, besides, were an example of perpetual motion, and it was therefore thought to be within the compass of natural operations to construct a machine that should go on for ever creating its own force. The first great steps toward the establishment of the modern scientific philosophy of nature were due to the perfection of the instruments of investigation and the gradual development of alchemy into chemistry. The introduction of the balance by Lavoisier and the art of exact weighing put an end to phlogiston; and with the discovery of oxygen chemistry was planted upon its firm experimental basis, with the establishment of the doctrine of the stability of the chemical elements. This ascendancy of chemical ideas favored the view that the forces are also of the nature of subtle elements. They were hence regarded as entities, imponderable material substances, which were supposed to be no more convertible into each other than metals or gases. The effects of heat were ascribed to the substantive principle of caloric; light to the emanation of material corpuscles; electricity and magnetism to ethereal fluids; and even sound was attributed to a peculiar resonant ether before it was explained by atmospheric vibrations. There was also a tendency to explain chemical effects by a peculiar entity called affinity, and the actions of living beings were held to be due to the agency of vitality. The various effects of forces were ascribed to the properties of these subtle agents; and when the chemical elements were proved to be not transmutable, it was considered that the same thing must be true of the imponderable elements.—It has been maintained that the principle of the conservation of force is involved in the old mechanical proposition that action and reaction are equal, and that cause must equal effect; and that therefore the doctrine is as old as the writings of Galileo, Newton, Bernoulli, and Laplace. However this may be, it is certain that these philosophers had no conception of the law as it is now established, and which is purely the result of modern experimental research. It has grown out of investigations into the properties and effects of heat. There are indeed remarkable intimations of the doctrine now established in relation to heat in writers of the 17th and 18th centuries. Lord Bacon in his *Novum Organon* says: "When I say of motion that it is the genus of which heat is the species, I would be understood to mean, not that heat generates motion, or that motion generates heat (though both are true in certain cases), but that heat itself, its essence and quiddity, is motion and nothing else." Locke has the following remarkable passage: "Heat is a very

brisk agitation of the insensible parts of an object, which produces in us that sensation from which we denominate the object hot; so that what in our sensations is heat, in the object is nothing but motion." These, however, were only happy conjectures. It is to the American Count Rumford that the world is indebted for the first experiments designed to test the nature of heat, which broke down its old interpretation, and went far to establish the modern theory. While engaged in the manufacture of ordnance at the arsenal in Munich (1796–'8), Rumford's attention was arrested by the large amount of heat resulting from friction in boring cannon, for which he could not account on the current hypothesis that it consisted of a material fluid. To satisfy himself on this point, he made the following experiment. A steel borer 0·63 of an inch in diameter was pressed into the cavity of a brass cannon with a force of 10,000 lbs., and made to revolve 32 times per minute. Heat was thus evolved in $2\frac{1}{2}$ hours sufficient to raise $18\frac{3}{4}$ lbs. of water from 60° to the boiling point. Whence came this large amount of heat? The old view assumed that caloric was latent in the metal, and was set free by the condensation of friction, as a piece of metal is heated by condensation in being hammered. But upon examining the chips Rumford found that their "capacity for caloric" was the same as that of the metal before the experiment; and that so large a quantity of heat could have been latent in a few grains of brass seemed impossible. Rumford therefore concluded that the heat was caused by friction, and was in the ratio of the power expended, and therefore inferred it to be a motion communicated to the heated body. In his paper describing the experiment he said: "In reasoning upon this subject we must not forget that most remarkable circumstance, that the source of the heat generated by friction in these experiments appeared evidently to be inexhaustible. It is hardly necessary to add that anything which any insulated body or system of bodies can continue to furnish without limitation, cannot possibly be a material substance; and it appears to me to be extremely difficult if not quite impossible to form any distinct idea of anything capable of being excited and communicated in these experiments except it be motion." In view of these results Rumford asks: "Is there any such thing as an igneous fluid? Is there anything that with propriety can be called caloric?" In 1799 Sir Humphry Davy melted ice by rubbing two pieces of it together in a machine below the freezing point of water, which strongly confirmed the results of Rumford. The deathblow was thus given to the materialistic hypothesis of heat, and the idea gradually made its way in the minds of scientific thinkers that in all cases of friction or percussion the thermal effect is due to an arrest of mechanical motion and an increase of molecular motion, the former being converted into the latter. When the idea became familiar that mechanical force is changed into heat, that is, that molar motion is transformed into molecular motion, it naturally led to the reverse view, that is, the reconversion of heat into mechanical force. A familiar example of this is the steam engine, in which heat produces molecular expansion in water, which is then transferred to the piston and produces mechanical effects. But if there be this reciprocal relation between mechanical force and heat, the unavoidable question arises as to the quantitative relations of the phenomena. How much mechanical force is equivalent to a given amount of heat, and *vice versa?* Carnot, a French engineer, undertook in 1824 to formulate this relation in the case of the steam engine, by establishing the law that the greatest possible work of a heat engine is related to the amount of change of temperature undergone during the action of such engine by the enclosed elastic body. This, however, was a fundamental question of great importance, requiring the most careful experimental determination, and it was entered upon by several scientists of different countries about the same time. Dr. J. P. Joule of Manchester, England, has the honor of first establishing experimentally what is called the "mechanical equivalent of heat." His mode of proceeding was to agitate different liquids, such as water, mercury, and oil, in suitable vessels, by paddles driven by falling weights. The friction produced heat, which raising the temperature of the liquids was carefully measured and its amount taken as the equivalent of the mechanical force expended. He also rubbed cast-iron disks against each other, carefully determining the force employed and the heat produced. As a result of a large range of trials with liquids and solids, he found that the same expenditure of power gave the same absolute amount of heat, whatever the substance used for producing friction. The average result of a long course of experiments was that 772 lbs. falling through one foot (that is, 772 foot pounds) produced sufficient heat to raise one pound of water 1° F. and conversely, one pound of water falling through one degree of temperature gives out heat enough to raise by expansion 772 lbs. one foot high. This is known as the "thermodynamic unit," or "Joule's equivalent." The quantitative investigation of the relations of forces now proceeded rapidly, and Joule's result was confirmed in other ways. It was found that an electric current which by resistance in passing through an imperfect conductor produces sufficient heat to raise one pound of water 1°, sets free an amount of hydrogen which when burned raises exactly one pound of water 1°; while the same amount of electricity will produce a magnetic force by which 772 lbs. may be raised one foot high. Thus electricity, magnetism, and chemical force were brought into numerical correlation with heat and mechanical power. Joule's

first paper on the mechanical equivalent of heat was published in 1843, though his full results did not appear till 1850. But in 1842 Dr. J. R. Mayer of Heilbronn, Germany, anticipated Joule's equivalent by calculation of the mechanical effects of heat in the expansion of gases; and Seguin of France is said to have arrived at the same numerical results by calculation in 1839. How ripe was the general scientific mind for the recognition of the great principle of the convertibility of the forces, is shown by the fact that it was promulgated about the same time by eminent physicists of different countries, with no knowledge of each other's work. Grove, Joule, and Faraday of England, Mayer of Germany, and Colding of Denmark, all maintained and illustrated the doctrine, and wrote upon it shortly after 1840. Of these none perceived it more clearly or expounded it more comprehensively than Prof. Grove, who in a lecture before the London institution in 1842 remarked: "Light, heat, electricity, magnetism, motion, and chemical affinity are all convertible material affections. Assuming either as the cause, one of the others will be the effect. Thus heat may be said to produce electricity, electricity to produce heat; magnetism to produce electricity, electricity magnetism; and so of the rest. Cause and effect, therefore, in their abstract relation to these forces, are words solely of convenience; we are totally unacquainted with the ultimate generating power of each and all of them, and probably shall ever remain so." The address published in 1842 showed that Prof. Grove had at that time a very broad grasp of the subject, and his views were subsequently elaborated in successive editions of his admirable monograph on the "Correlation of Forces," he being the first to employ this phrase. Prof. Helmholtz, who also worked out the subject independently, subsequently introduced the phrase "conservation of force," to indicate the indestructibility of energy. It is therefore now regarded as a fundamental truth of physical science, and a fundamental law of nature, that force, like matter, is never created or destroyed. With the disappearance of any force, an equivalent effect in some other form must be invariably produced; while every manifestation of force is at the expense of some preëxisting form of power. One of the important results of this doctrine has been to give increasing interest to the problem of the constitution of matter, and to lend strong confirmation to the old idea of its atomic composition. (See Atomic Theory.) When a body is heated by percussion, the explanation is that the mechanical force expended is taken up by the atoms of the body as an increased internal motion among them. What that motion is can only be known by inference; but that it exists, and is probably capable of many forms, is now an irresistible conclusion of molecular physics. Heat, light, electricity, magnetism, and chemical attraction are all ranked as molecular forces; and as they are convertible into each other, it is of the greatest interest to know what conception of the material substratum will consist with these wonderful interchanges of effect. The view now accepted involves four assumptions as to the constitution of all material substances: 1st, that they consist of indivisible atoms; 2d, of divisible but imperceptible molecules or groups of atoms; 3d, of interatomic and intermolecular spaces; and 4th, of motions among atoms and molecules in these spaces. These conditions being postulated, the problem is to conceive what kind of molecular motions are peculiar to each kind of force. The problem is one of great complexity, but as force is always manifested by motion, the convertibility of forces resolves itself at last into the convertibility of molecular motions.—As the doctrine of the correlation of forces was worked out, it became necessary to distinguish more broadly than before between different states of power, and it was recognized as existing in two general forms, known as potential energy and actual energy. Force stored up in certain conditions of matter, as a raised weight, a bent spring, a compressed gas, an explosive compound, or a combustible body, is called potential energy, that is, power capable of being liberated for the production of effects. Water at the top of a dam ready to fall, the tension of particles in nitroglycerine, wood and coal, and the food of animals, are all examples of the storing of power or potential energy. But when the water falls, or the spring is released, or the nitroglycerine explodes, or the fuel is burnt, or the food decomposed in the animal body, the forces they contain are given out in the form of effects produced, and the potential energy becomes actual energy, living force, or *vis viva*. In the changes that take place power is never destroyed, but simply escapes into new conditions; it is constantly passing from the actual to the potential, or from the potential to the actual state. The doctrine of the conservation of force teaches that while the quantities of potential and actual energy are incessantly varying, their sum remains unalterable in the universe.—In giving fuels and foods as examples of potential energy, the principle of conservation is extended to the organic world, and its operation is seen alike in the larger relations of the organic kingdoms to each other and to inorganic nature, and in the physiological history of each individual. Dynamically considered, the plant, as a type of the vegetable kingdom, is a solar engine, the object of which is to raise matter from a lower to a higher condition of power. The solar radiations are now regarded as the great source of energy in carrying on terrestrial changes. According to Sir William Thomson, the heat hourly given out by each square yard from the solar surface is equal to the combustion of 13,500 lbs. of coal, and gives a force equivalent to 63,000 horse power. At this rate the total

heat radiated from the sun would be sufficient to raise from freezing to boiling 700,000,000,000 cubic miles of water each hour. Solar heat, by the evaporation of water from the terrestrial surface, raises it to the potential state of atmospheric vapor, which precipitated as rain maintains the conditions of organic life upon the land, and gives rise to watercourses, which sweep down the soil to the lower levels, and thus become sources of geological change. As the water descends it is made to turn wheels, and becomes available as water power. Solar heat at the same time expands the air and gives rise to atmospheric currents, which by turning wheels in the air or propelling ships is made available as wind power. The total amount of solar heat falling annually upon a square foot of land in lat. 50° is equal, according to Thomson, to 530,000,000 foot pounds; and of this he estimates that about ·01 is spent upon the vegetable kingdom in impelling changes of growth and secretion. Under the influence of light the green parts of plants decompose carbonic acid, water, and ammonia, and the plant then works up the elements into its peculiar organic compounds, which thus become depositories of solar force. By the slow process of natural decay these compounds are disintegrated, and their elements fall from the organic to the inorganic stage, and in the successive stages of decomposition give out their stored forces as heat, which is taken up by surrounding bodies or diffused into space. By the quick combustion of organic compounds, the stored force is given back with such intensity that it may be made available for mechanical effects. The particles of a pound of coal when burnt fall to the mineral state, and give out power enough to raise from 5,000,000 to 10,000,000 lbs. a foot high. The steam engine is thus driven by the solar energy accumulated in fuel. The vegetable kingdom is thus designed to accumulate force, the animal kingdom to expend it. Their operations are antagonized, as was first shown in detail by Dumas and Boussingault in an admirable little work entitled "The Balance of Organic Nature." They there showed that while the office of vegetables is constructive, that of animals is destructive. Plants decompose carbonic acid, water, and mineral salts; animals produce them. Plants form organized compounds; animals destroy them. Plants absorb force; animals give out or expend force. The animal body is hence a dynamic engine, with no capacity of creating force, and which can only make use in various ways of that which is stored up in the food consumed.—The relation between food and work has lately occupied much of the attention of physiologists, who have aimed to determine the connection between animal excretions of different kinds, and the elementary matters ingested and the products excreted. The first use of food is for growth or animal construction; but when the bones, muscles, brain, and other organs are developed and the adult state is reached, the first use for food disappears, and a balance is struck between the income and the expenditure of the system. Foods being regarded generally as sources of power, without reference to the way they are used, they have very different values in this respect. Dr. Edward Smith, in his excellent work "On Foods," says that an ounce of fresh lean meat, if entirely burnt in the body, would produce heat sufficient to raise about 70 lbs. of water 1° F., or a gallon of water about 7° F. In like manner one ounce of fresh butter would produce about ten times that amount of heat; but it must be added that, as the combustion which is effected within the body is not always complete, the actual effect is less than that now indicated. Dr. Smith states the results of Prof. Frankland's researches into the dynamic effects of different elementary principles as follows:

FOOD.	In combustion raises lbs. of water 1 deg. F.	Which is equal to lifting lbs. 1 foot high.
10 grains of dry flesh	13·12	10,128
" " albumen	12·85	9,920
" " lump sugar	8·61	6,647
" " arrowroot	10·06	7,766
" " butter	18·68	14,421
" " beef fat	20·91	16,142

The amount of power which the average man is capable of exerting in a given time, and the relative amounts that are expended in different ways, have been proximately determined; but the difficulty of investigation will probably long be a cause of disagreement in results. The measured products of physiological change are indices of the force developed in such change. Dr. Edward Smith has estimated the daily excretion of carbon in the form of carbonic acid from the lungs, in the case of four persons, as follows:

PERSONS.	Body weight, lbs.	Carbon, oz.
Mr. Moul	173	6·735
Dr. E. Smith	196	7·850
Prof. Frankland	136	5·600
Dr. Murie	133	6·540

These data, converted into vertical miles through which the body weight is lifted by the carbon consumed, give the following elevations:

Mr. Moul	5·17 miles.
Dr. E. Smith	5·32 "
Prof. Frankland	5·47 "
Dr. Murie	6·53 "

It is obvious that the carbonic acid from the skin and the kidneys, if taken into account, would here increase the mechanical effect. Much the largest portion of food consumed in the system goes for the production of animal heat. In the diet of infants, in which growth is to be provided for, the ratio of tissue-forming to heat-producing elements is about one to three. When growth ceases this relation is

changed, and the heat-producing elements become as five or six to one. This proportion is not far from that arrived at by the measurement of the force produced from these two sources. Dr. Samuel Houghton, the eminent physiologist of Dublin, calculated, from a course of experiments on himself, that the heat generated in the system, if converted into work, would be sufficient in 24 hours to raise his body to a height of six miles; and he estimates that the daily external muscular work of a man is about one sixth of this, or sufficient to raise him with his clothes and travelling knapsack to the height of about one mile. The results of more numerous experiments upon different men give a larger result; and while Houghton gives 353·75 foot tons as the equivalent of daily labor, Prof. Huxley states the average to be 450 foot tons. Dr. Houghton makes the internal vital work of the system to be very nearly the same as the external muscular work. Considering the body in the light of a vital engine for the development of power by transformation of matter, the problem must be solved on the basis of the physiological constants which are given by Prof. Huxley in his "Elementary Physiology" as follows. The average weight of the human body being taken at 154 lbs., "it would lose in 24 hours—of water, about 40,000 grains, or 6 lbs.; of other matters about 14,500 grains, or over 2 lbs.; among which of carbon 4,000 grains; of nitrogen 300 grains; of mineral matters 400 grains; and would part, per diem, with as much heat as would raise 8,700 lbs. of water from 0° to 1° F., which is equivalent to 3,000 foot tons. The losses would occur through various organs; thus—by the

	Water, grs.	Other matter, grs.	Nitrogen, grs.	Carbon, grs.
Lungs	5,000	12,000	....	3,300
Kidneys	23,000	1,000	250	140
Skin	10,000	700	10	100
Fæces	2,000	800	40	460
Total	40,000	14,500	300	4,000

The gains and losses of the body would be as follows:

Cr.	Grs.	Dr.	Grs.
Solid dry food	8,000	Water	40,000
Oxygen	10,000	Other matters	14,500
Water	36,500		
		Total	54,500
Total	54,500		

Such a body would require for daily food, carbon 4,000 grains, nitrogen 300 grains, which, with the other necessary elements, would be most conveniently disposed in

	Grs.
Proteids	2,000
Amyloids	4,400
Fats	1,200
Minerals	400
Water	36,500
Total	44,500

which, in turn, might be obtained, for instance, by means of

	Grs.
Lean beefsteaks	5,000
Bread	6,000
Milk	7,000
Potatoes	3,000
Butter, dripping, &c	600
Water	22,900
Total	44,500."

Physiologists include nervous force in the correlated series, although a quantitative estimation of intellectual and emotional effects has hardly been attempted. It is perfectly well known that the intense and prolonged action of the brain draws powerfully upon the bodily energies; and it may be inferred from the large amount of blood sent to the brain, to sustain the physical processes, that a very considerable portion of the force of nutriment is spent in this way, although physiologists are cautious about tabulating this item of expenditure.—From what has been said, we cannot suppose that Faraday or Helmholtz over-estimated the import of the law of conservation, for it certainly opens a new epoch in the progress of science, and gives a new aspect and a new interest to almost the whole range of its questions. If the amount of power in nature and in all parts of nature, including the domain of life, be thus inexorably limited, this fact becomes a fundamental condition, under which all research is to be pursued. When force apparently disappears, wherever it is exercised, science demands that it shall be traced and its equivalent effects stated. This enforces the view of dynamic causation and the derivation of one state of things from another. (See Evolution.) If the principle be universal, it must apply to the activities of human society, which are but phenomenal effects of vital and mental forces; and the law thus becomes a fundamental doctrine of the science of society.—It has been stated above that the modern experimental investigation of this subject was initiated by an American; other American scientists have also contributed to the investigation. Prof. Joseph Henry has published valuable original papers in the "Smithsonian Contributions;" and Prof. Joseph Le Conte, of the university of California, printed an able and ingenious essay on the correlation of the physical and vital forces in the "American Journal of Science" for 1859. Prof. Benjamin N. Martin, of the university of the city of New York, has also recently published two acute and valuable papers on the limits and metaphysical bearings of the doctrine.

CORRÈZE, a southern department of France, bordering on the departments of Haute-Vienne, Creuse, Puy-de-Dôme, Cantal, Lot, and Dordogne; area, 2,265 sq. m.; pop. in 1872, 302,746. It was formed from the ancient province of Limousin, and takes its name from the river Corrèze, a branch of the Vezère, which has its whole course in this department. The surface is hilly, and in the north (Montagne) there are mountains 4,000 ft. high and covered with snow most of the year. This district is stony

and sterile, but the south is more fertile. Besides the Corrèze, the principal rivers are the Dordogne and Vezère, which cross the department from N. to S. The chief products are rye, buckwheat, and potatoes. Some wine is produced, but it is of poor quality. A considerable number of oxen are raised for the Paris market and for work, and there are more than 400,000 sheep, chiefly of native breed. A coal mine is worked at Lapleau, and there are also mines of lead, iron, copper, and antimony, most of which are poorly worked and produce little. The chief manufactures are guns, which are made at Tulle, and cotton. The peasants are poor, their food consisting mainly of buckwheat, potatoes, and chestnuts, the last of which are very abundant. The department is divided into the arrondissements of Tulle, Brives, and Ussel. Capital, Tulle.

CORRIE, Daniel, bishop of Madras, born in England in 1777, died in Madras, Feb. 5, 1837. He went to India in 1806, was appointed archdeacon of Calcutta by Bishop Heber in 1823, and consecrated bishop of Madras June 14, 1835. He was a fellow laborer with Buchanan, Martyn, Heber, and Turner. He translated Sellon's abridgment of the Scriptures, the English prayer book, homilies, and other religious works, into Hindostanee, and compiled in English the outlines of ancient history for the use of the schools in India.

CORRIENTES. I. A province of the Argentine Republic, between lat. 25° 30′ and 30° S., and lon. 53° 30′ and 59° 50′ W., bounded N. by Paraguay and Brazil, E. by Brazil, S. by the province of Entre Rios, and W. by the Gran Chaco; area, 60,000 sq. m.; pop. in 1869, 120,198. It is surrounded by rivers, having the Uruguay on the east, the Paraná on the west and north, and the Corrientes on the south. A large portion of the province in the south is covered by forests, furnishing excellent ship timber. The north is marshy, and contains the remarkable lake of Iberá, which covers over 1,000 sq. m. The soil is fertile, and produces rice, sugar, tobacco, cotton, indigo, &c., abundantly; but the inhabitants are mostly employed in the raising of cattle, horses, and sheep. **II.** The capital of the province, on the left bank of the Paraná, 20 m. below its junction with the Paraguay, and 485 m. N. by W. of Buenos Ayres, in lat. 27° 32′ S., lon. 58° 44′ W.; pop. in 1869, 10,670. The city is laid out with streets intersecting at right angles. There are several churches of some architectural pretensions, a *cabildo* or government house, and a college. The buildings are generally of one story, supplied with broad galleries. The better class of dwellings are of brick, with open courts adorned with orange trees and flowers. The town has an extended water front, and the anchorage admits of a near approach to the shore. It is well situated for commercial purposes, being the entrepot for trade between the upper part of the Paraguay and the Paraná and the seaports on the coast. It is the principal market of the Chaco Indians for furs, and exports hides and wool.

CORROSIVE SUBLIMATE. This salt has long been described as a bichloride of mercury, consisting of two atoms of chlorine and one of mercury; but it is actually composed of one equivalent each of mercury and chlorine, and should be known as the protochloride of mercury, a name very commonly given to calomel, which is properly a subchloride, consisting of two atoms of mercury and one of chlorine. This distinction is the more important to be made, as both these chlorides are powerful medicines, and a mistake in administering one for the other might be attended with the most serious consequences. Corrosive sublimate was known at an early period to the Chinese, and was spoken of by Geber about A. D. 800. It is obtained in cakes of small translucent and colorless prisms, clustering together, which are soluble in water, and more readily in alcohol. The specific gravity is variously given from 5·14 to 6·5. The salt fuses at 509°, and boils at 563°, being converted into a colorless vapor of density 9·42. Corrosive sublimate has an acrid and caustic taste, somewhat styptic, and shows an acid reaction in reddening litmus paper. Taken internally, it acts as a violent poison, corroding the parts with which it comes in contact, and producing violent irritation, intense pain in the bowels and stomach, with vomiting and diarrhœa. It is neutralized and its effects mitigated by administering albuminous matters, as the white of eggs, or gluten in the form of flour, or caseous matters, as the curd of milk. It should be remembered, however, that the compounds formed by these substances with corrosive sublimate, although much less active than that salt alone, are only relatively insoluble, and should be got rid of by emetics or the stomach pump as soon as possible. Corrosive sublimate is decomposed by protosulphuret of iron, iron filings, and Peruvian bark, which may consequently be used as antidotes. The salt is obtained in an experimental way by heating a globule of mercury in an iron spoon, and plunging it into a bottle of chlorine gas; the metal takes fire and burns, producing the chloride. It may also be obtained by dissolving the red oxide of mercury in hot hydrochloric acid; as the solution cools, the chloride crystallizes. In the large way, it is usually prepared by heating in a retort the protosulphate with a mixture of sea salt; the protochloride sublimes, and is deposited upon cold surfaces, and sulphate of soda remains in the retort. The process of the United States Pharmacopœia is to boil 2 lbs. of mercury with 3 lbs. of sulphuric acid, until a white dry mass is left. This when cold is to be rubbed with chloride of sodium in an earthenware mortar, and then distilled. Corrosive sublimate has strong antiseptic properties, owing in part to its forming insoluble compounds with nitrogenous substances. A mere trace of it in a bucket of water, it is stated,

serves to preserve for a long time meat that has been placed in it for a few hours. The common use of the substance for this purpose would, however, be dangerous. The method of preserving wood from decay introduced by Mr. Kyan consists of filling its pores with a solution of this salt.—In medicine, corrosive sublimate is given in small doses by the mouth to obtain the constitutional effects of mercury upon the human system. It has the advantage of being less liable to salivate than most other mercurial preparations. It has been used hypodermically for the same purposes, but is liable when thus used to cause severe local irritation. Externally it is a parasiticide and irritant. It is used as an antiseptic for the preservation of anatomical specimens, which should be cautiously handled lest the hands become inflamed by contact with it, or absorption take place from an abraded surface. Corrosive sublimate, like all mercurial preparations, is much less employed in medicine than formerly. When secondary syphilis occurs in persons of robust health, undoubted advantage may be derived from its appropriate administration, but its action should be watched by a competent physician. It is more likely to do harm than good in the tertiary forms of the same disease. Glandular swellings and chronic inflammatory affections of mucous surfaces, especially of the throat, ear, and uterus, are sometimes benefited by the judicious use of corrosive sublimate. Persons of delicate health or feeble constitution should not be subjected to its influence, nor should it be allowed to vitiate the blood or disturb the digestion. It may be given in pill or solution. The dose varies from $\frac{1}{50}$ to $\frac{1}{8}$ gr., which may be given three times a day. The stomach tolerates it better after food than before. (See MERCURY.)

CORRY, a city of Erie co., Pa., 27 m. S. E. of Erie; pop. in 1870, 6,809. The first building was erected on its site in August, 1861, after the discovery of petroleum, the refining and trade in which still form its principal branch of industry. It was incorporated as a city in 1866. The Philadelphia and Erie, the Atlantic and Great Western, the Buffalo, Corry, and Pittsburgh, and the Oil Creek and Alleghany River railroads intersect here. There are several churches, two banks, machine shops, oil refineries, oil warehouses, tanneries, steam saw mills, and two daily and two weekly newspapers. In 1871 there were 17 schools, of which one was a high school, with 20 teachers and 868 pupils.

CORSET, an article of dress enclosing the chest and waist, worn chiefly by females to support or correct the figure. It is usually made of firm cloth, stiffened by rods of whalebone or other material, and furnished in front with vertical plates of steel or whalebone, which clasp and rest on the sternum, separating the breasts, and behind with lacing by which the compression can be regulated. Bandages resembling corsets were worn by the Roman matrons during the republic and the empire, at first with the design only of supporting the breasts, but afterward to compress the form and give it an air of slightness, which was esteemed one of the attributes of beauty. Prior to the French revolution, corsets of German invention had been worn for several centuries, which contained rods and plates of whalebone and steel, and were designed both to conceal the defects and exaggerate the beauties of the figure. When tightly laced, they were prejudicial to health, since by pressure upon the lungs and heart the vital functions of respiration and circulation were impeded, and organic inflammations, unhealthy secretions, and vertebral distortions were frequently the result. At the period of the revolution, the French ladies, having adopted the Greek costume, brought into use a very slight corset, which served as a support, but was not laced tightly enough to cause constraint or pain. During the present century fashion has repeatedly returned to small waists, and corsets are sometimes laced so as to compress the vital organs of the body, distort the form, destroy its beauty, and injure the health. The most valuable treatise on the subject is Dr. Bouvier's *Études historiques et médicales sur l'usage des corsets* (1853).

CORSICA (Fr. *Corse*), an island in the Mediterranean, about 100 m. S. E. of the coast of France, of which it forms a department, 50 m. W. of Tuscany, and separated on the south from the island of Sardinia by the strait of Bonifacio, 7 m. wide. It lies between lat. 41° 20′ and 43° N., and lon. 8° 32′ and 9° 34′ E.; greatest length, 116 m.; greatest breadth, 52 m.; area, 3,377 sq. m.; pop. in 1872, 258,507. The E. coast is low and of regular outline; the W. is high and broken by numerous bays and harbors, the chief of which are those of San Fiorenzo, Calvi, Porto, Sagone, Ajaccio, and Valinco. The interior is traversed from N. to S. by a granitic range with many summits more than 7,000 ft. high, wrapped in never-melting snows, while the culminating peak, Monte Rotondo, in the centre of the island, has an elevation of 9,054 ft. There are many small rivers, none navigable, and all having a rapid descent to the sea. The two largest are the Golo and Tavignano, which have an E. course. Along the E. coast, which is generally marshy, there are several lagoons, the most extensive being the Stagno di Biguglia, in the north, S. of the port of Bastia. Except in the region of these marshes, the climate is healthy. The hills are covered with forests of oak, pine, cork, beech, chestnut, larch, turpentine and wild olive trees, &c. The date palm, orange, citron, fig, almond, pomegranate, and mulberry flourish; the olive is cultivated; honey and wax are obtained in large quantities from the forests; the fertile plains, slopes, and valleys produce wheat, maize, barley, cotton, sugar, indigo, tobacco, madder, and the grape; but the wine, amounting to about 6,600,000 gallons a year, is carelessly made and poor in

quality. The principal minerals are lead, iron, black manganese, asbestos, granite, marble, emeralds, and pipe clay. Iron is mined in several places, and the product is sufficient to supply 10 forges, which are situated at Catalane. The most valuable domestic animals are the mule and goat; the sheep are small, with coarse black wool, and four or even six horns, but are prized for their delicate flesh. Among the wild animals are the moufflon, or wild sheep, fox, wild boar, deer, hare, and various kinds of game. The coasts afford valuable fisheries of tunny, pilchards, and anchovies. The manufactures are few and of little value, consisting mainly of woollen for domestic consumption, glass, leather, tobacco pipes, and soap. Timber is exported, many fine pines being taken to France for masts. The other exports are wines, the red of Sara and the white of Cape Corso, oil, silk, dried fruits, and leather. The Corsicans are hospitable, temperate, and brave, but indolent, impetuous, and vindictive; human life, although more secure than in former times, is still frequently sacrificed in the heat of passion or revenge. The predominant religion is the Roman Catholic, and the principal language Italian. The cottages, built chiefly on steep hillsides, are often little more than four bare walls, with a single opening, which serves for both door and window, and occasionally a second story, the ascent to which is by a ladder. They have no fireplaces, and the furniture is as rough as the building. The roads in the interior are generally poor, but there are four good roads across the island, made by the French, and there is communication by steam with Marseilles, Toulon, and Leghorn. There is a submarine telegraph from the north of the island to Spezia on the Italian coast, one from near Ajaccio on the W. coast to Toulon, and one under the strait of Bonifacio to Sardinia. Corsica is divided into the arrondissements of Ajaccio, Sartena, Bastia, Calvi, and Corte. Capital, Ajaccio. Principal seaport, Bastia. The other chief towns are Calvi on the N. W. coast, Corte in the interior, Sartena, Porto Vecchio, and Bonifacio in the south. — Corsica seems to have been first settled by Ligurians. It was held successively by the Ligurians, Etruscans, and Carthaginians; was ravaged by the Romans in 259 B. C., and was subjugated by them about 230. On the dismemberment of the empire it fell into the hands of the Goths. It became subject to the Franks in the 8th century, to the Saracens in the 9th, and to Pisa in the 11th; was annexed to the Papal States by Gregory VII.; passed again under the power of Pisa, afterward of Genoa, then of Aragon; and finally became in the 14th century a possession of the Genoese, who held it till the 18th, when it became a scene of revolutions, during which a German adventurer, Theodor von Neuhof, was proclaimed king of the island. After his fall the Corsicans under Gen. Paoli achieved their independence, but in 1769 they were subdued by the French. (See Paoli.) In 1793 Paoli, assisted by the English, drove out the new masters, and the island was placed under the protection of the British crown; but in 1796 the patriots were again subdued, and in 1814 the island was secured to France by the treaty of Paris. Corsica has produced several eminent men, and above all Napoleon.—See Jacobi's *Histoire générale de la Corse* (Paris, 1835), and Gregorovius's *Corsica* (2 vols., Stuttgart, 1854; English ed., London and Philadelphia, 1855).

CORT, Cornelis, a Dutch painter and engraver, born at Hoorn in 1530, died in Rome in 1578. He studied under Hieronymus Cock, and went to Venice in 1566, where he became an engraver, and reproduced in copperplate many of the paintings of Titian, who seems to have employed him. He afterward engraved for Tintoretto and other Venetian painters. From Venice he went to Rome, where he established a school for engraving. Among his pupils was Agostino Carracci. Of his works, the "Transfiguration of Raphael" and the "Massacre of the Innocents," after Tintoretto, have been most admired.

CORT, Henry, an English inventor, born at Lancaster in 1740, died in 1800. He established himself as an iron merchant at Gosport, and afterward erected iron works at Fontley, near that town, where he expended upward of £20,000 in perfecting processes for puddling and rolling iron. His experiments were successful, in spite of the opposition of the most powerful iron masters of England, and on June 17, 1783, a patent was granted to him "for machinery, furnace, and apparatus, for preparing, welding, and working various sorts of iron;" and a second patent on Feb. 14, 1784, "for shingling, welding, and manufacturing iron and steel into bars, plates, and rods of purer quality and in larger quantity than heretofore, by a more effectual application of fire and machinery." He took into partnership Adam Jellicoe, chief clerk in the office of the paymaster of the navy, and for some time, by contracts with the government, and by other extensive operations, the iron works were placed in a highly flourishing condition. But after his partner's death the navy board seized the works for claims against Jellicoe, involving Cort in onerous lawsuits, and eventually in total ruin. He was compelled to accept employment as superintendent of the works of the same iron masters whom he had enriched by his life-long labors, who secured his services under the promise of aiding him in the recovery of his own establishment; but these promises were never redeemed, and the only compensation which he received was a pension of £200 granted to him by the government in 1794. He has been called the "father of the British iron trade."

CORTE, a town of Corsica, on the Tavignano, 35 m. N. E. of Ajaccio; pop. in 1866, 6,094. It has a court, a communal college, and the

Paoli school, established in 1836 with a fund of 25,000 francs bequeathed for that purpose by Paoli, who was a native of Corte.

CORTEREAL, Gaspar, a Portuguese navigator, died about 1501. He was of a distinguished family, engaged in the colonization of the Azores. In 1500 he was appointed by the king of Portugal to command an expedition to explore the northern coasts of North America. He sailed from the Tagus in that year with two ships, ranged the shores of the country afterward called Canada, and freighted his ships with 57 Indians, whom on his return he sold as slaves; and the name Labrador (laborer), afterward transferred to a more northern region, is a memorial of his visit. Soon afterward he set sail from Lisbon on a second voyage to the same regions, but never returned. His brother Miguel sailed in search of him in 1502, and was never afterward heard from.

CORTES (formerly Puerto Caballos), a port of Honduras, opening on the bay of Honduras, in lat. 15° 49′ N., lon. 87° 57′ W. It is the Atlantic terminus of the Honduras interoceanic railway. The port is of large capacity, being not less than 9 m. in circumference, and for more than two thirds of its area it has from 4 to 12 fathoms of water. Connected with the bay is a large salt-water lagoon, about 2 m. long and 1¼ m. broad, with an average depth of 24 ft. There are no marshes to affect the healthfulness of the locality, and it offers every condition necessary for the building and support of a large city. Cortes in his expedition into Honduras founded here a town which he called Natividad. For more than two centuries it was the principal port on the coast, but during the domination of the buccaneers the harbor was found to be too large to be easily defended, and the settlement was removed to Omoa, 10 m. S. W.

CORTES, Hernan or **Hernando,** the conqueror of Mexico, born in Medellin, a small town of Estremadura, Spain, in 1485, died near Seville, Dec. 2, 1547. His father, Martin Cortes of Monroy, and his mother, Doña Catalina Pizarro Altamirano, were both of good family, but in reduced circumstances. Hernando was a sickly child, and in early life was many times at the point of death. When 14 years of age he was sent to the university of Salamanca to study law, and remained there two years. In 1501 he returned home without leave from his parents, and, finding no content in Medellin, determined to accompany Nicolas de Ovando, also an Estremaduran, who was about to sail to Santo Domingo to supersede Bobadilla in his command. Cortes met with an accident which prostrated him, while Ovando's expedition sailed; and he thereupon determined upon going into Italy to seek service with the "great captain" Gonsalvo de Cordova. Arriving in Valencia, he was there taken sick, and passed a year in that town in hardship and poverty. At the expiration of the year he returned to Medellin, and in 1504 sailed from San Lucar in a merchant vessel for Santo Domingo. He was received with favor by the governor of Hispaniola, was employed under Diego Velasquez in pacifying a revolt, and at the end of the war received from Ovando a *repartimiento* of Indians, and a notarial office in the newly founded town of Azua. He held successively several appointments, and in 1511 accompanied Diego Velasquez, who was sent by Diego Columbus to subdue and colonize Cuba. He afterward held the office of alcalde of Santiago, in the new colony. Meantime he married Doña Catalina Juarez, one of a family of Spanish ladies who had come over in the suite of Maria de Toledo, the vice queen. After his marriage he employed himself and his Indians in getting gold. "How many of whom [the Indians] died in extracting this gold for him, God will have kept a better account than I have," says Las Casas. When Grijalva, the lieutenant of Velasquez, returned from the discovery of Mexico, without having attempted the settlement of that country, Cortes was appointed in his place to the command of a new expedition which was to start at once. At the last moment Velasquez repented of the appointment, and endeavored to stop the expedition. But Cortes hastened his preparations, and on Nov. 18, 1518, he set out from Santiago with 10 vessels, 550 Spaniards, 200 or 300 Indians, a few negroes, 12 or 13 horses, 10 brass guns, and some falconets. Picking up stores by the way, sometimes without paying, he arrived at Trinidad, on the S. coast of Cuba, where an order came from Velasquez to deprive Cortes of his command. A similar order awaited him on his arrival at Havana, but in neither place could it be enforced; and writing a letter of remonstrance to Velasquez, Feb. 10, 1519, Cortes left Havana for the island of Cozumel on the coast of Yucatan. On March 4 he first landed on the shores of Mexico, in the province or country called Tabasco; and here presently he fought his first battle with the natives, who proved exceedingly brave, but who were awestruck at the sight of horses and the roar of the artillery. At San Juan de Ulua he first heard of the native sovereign called Montezuma; that he reigned over an extensive empire which had endured above three centuries; that 30 vassals, called caciques, obeyed him; and that his power and riches were immense. Laying the foundation of the town of Vera Cruz as a post to be left in his rear, he caused himself to be chosen captain general of his new colony; destroyed his ships, to make retreat impossible and to reënforce his army with the seamen; took the part of several native tribes against Montezuma's tax collectors, and thus ranged them on his side; and finally, on Aug. 16, leaving a small garrison from his meagre force at Vera Cruz, set off for the city of Mexico, the residence of the great Montezuma and the capital of the country. The republic of Tlascala, lying between the coast and the capital, though

at feud with Montezuma, opposed the march of Cortes. After four battles, wherein he each time defeated an enormous force of the enemy, he entered the city of Tlascala on Sept. 18. The Spaniards were thought to be of divine origin, and human beings were sent to them as sacrifices. Ambassadors from Montezuma had met Cortes before he entered Tlascala, but with no important consequences. He endeavored, but in vain, to persuade the Tlascalans to abjure their religion; prevailed upon them to own themselves vassals of the king of Spain; and after a 20 days' stay in the city marched toward Mexico by way of Cholula, accompanied by some thousands of his new allies. Escaping an ambuscade set for him by the Cholulans at the instance of the Mexicans, and punishing the people for their proposed attack, he continued his march, and arrived before Mexico, Nov. 8, 1519, with 6,000 natives and his handful of Spaniards; was received with great pomp by Montezuma and his subjects; immediately secured a stronghold in a beautiful palace assigned as his quarters; and, using the occasion of an attack made by a party of Mexicans upon some of the Spaniards as a temporary justification for one of the boldest acts in all history, took Montezuma captive in his own palace, and conveyed him to his quarters under threats of instant death if he made a sign for help to his subjects. The 17 persons who had attacked the Spaniards were captured and burned to death before the gates of the imperial palace. Montezuma was placed in irons during the execution, and forced to acknowledge himself a vassal of Charles V. Taking prisoner also Caminatzin, the bravest of the king's nephews, Cortes now persuaded Montezuma to induce all his nobles and vassals to swear allegiance to the king of Spain; and this done, he obtained of the fallen king gold to the value of 100,000 ducats. Now, however, he was informed of the landing of an armament under the command of Narvaez, come to displace him. Leaving 200 men in Mexico, whom with unparalleled audacity he recommended to the care of Montezuma as a vassal of Charles V., he took 70 men, was joined by 150 more whom he had left at Cholula, and captured Narvaez, who was encamped in a city of the Cempoallans, with his 80 horses, 900 men, and 10 or 12 field pieces. The defeated troops readily ranged themselves under his standard; but returning to Mexico, Cortes found that the people had revolted against the Spaniards. Montezuma, still a prisoner, on endeavoring to address his subjects, was assailed by the mob, and wounded so that in a few days he died. The Spaniards were furiously attacked and driven out of their quarters, and out of the city; their rear guard was cut to pieces; and after a harassing retreat of six days, the Mexicans offered battle on the plain of Otumba, and here, on July 7, 1520, Cortes gained a victory which decided the fate of Mexico. He immediately proceeded to Tlascala, collected an auxiliary native army, and, having subdued the neighboring provinces, marched against Mexico, and took the city after a gallant defence of 77 days, Aug. 13, 1521. The accounts of his exploits which he sent to Europe caused his irregular conduct to be forgiven, and excited the liveliest admiration of his genius and skill. He was declared governor and captain general of Mexico, and had conferred upon him the marquisate of Oajaca, with a considerable revenue. His course of conquest, however, was such as to embitter the natives against him. He was particularly zealous to destroy their idols, and ever anxious to convert these pagans by force to Christianity. They took up arms against him in vain; European arms, valor, and zeal conquered on all hands. Guatemozin, the new emperor, a man of greater energy than Montezuma, was with a number of his caciques executed with great cruelty, by the orders of Cortes. But his victories caused him to be dreaded at home; commissioners were sent out to watch his course; and while he was completing his conquests his property was seized and his servants put in irons and imprisoned. Indignant at such treatment, Cortes returned to Spain in great splendor, to appeal for justice. He was received with every distinction, decorated with the order of Santiago at the hands of Charles V., and returned to Mexico with new titles, but with diminished power; the military authority only remained in his hands, a viceroy having been intrusted with the administration of civil affairs. In 1536 Cortes visited the peninsula of California, and surveyed part of the gulf which separates it from Mexico. Disgusted with the men sent out to watch him, he returned again to Europe, and accompanied Charles V. (who had received him coldly) on a disastrous expedition to Algiers in 1541, serving as volunteer. On the return of the expedition he was utterly neglected, and could not obtain an audience. One day he forced his way to the emperor's presence and upbraided him with his ingratitude, then withdrew finally from court, and died in solitude in the 63d year of his age. Five letters addressed to Charles V., and detailing his conquests, are the only writings of Cortes.—See "Letters and Despatches of Cortes," translated by George Folsom (New York, 1843).

CORTETZ, or **Cortitz,** an island of Russia. See Kortetz.

CORTLAND, a central county of New York, touching Skaneateles lake on the northwest; area, 480 sq. m.; pop. in 1870, 25,173. It has an uneven surface and a good soil. It is well supplied with water, and contains salt and sulphur springs. Iron ore is found in some localities. The Syracuse, Binghamton, and New York railroad traverses it, and the Southern Central railroad passes through the S. W. corner. The chief productions in 1870 were, 25,438 bushels of wheat, 151,810 of Indian corn, 389,667 of oats, 244,527 of potatoes, 114,197 tons of hay,

826,273 lbs. of cheese, 3,431,135 of butter, 59,169 of wool, 303,773 of maple sugar, and 70,259 of hops. There were 6,808 horses, 32,905 milch cows, 10,472 other cattle, 12,503 sheep, and 6,220 swine; 14 grist mills, 15 saw mills, 9 tanneries, 25 manufactories of carriages and wagons, 19 of cheese, 2 of agricultural implements, 6 of boots and shoes, 9 of furniture, 4 of iron castings, 1 of linseed oil, 16 of saddlery and harness, 1 of vinegar, 1 woollen mill, 1 planing mill, and 3 leather-currying establishments. Capital, Cortland Village.

CORTONA, a city of Italy, in the province and 14 m. S. E. of the city of Arezzo, in the Val di Chiana, on the railway from Arezzo to Perugia; pop. about 5,000. It contains a cathedral, theatre, and the palazzo Pretorio, the seat of the celebrated Etruscan academy, founded in 1726, comprising a library and a museum of Etruscan antiquities. It is one of



Cortona.

the most ancient cities of Italy, and was once a member of the Etruscan confederacy, situated near the lake Thrasymenus. It is said to have been originally built by the Umbrians, and to have been in the possession of the Pelasgians for a considerable period before it fell into the hands of the Etruscans. It was afterward captured and colonized by the Romans, but under their dominion it sunk into insignificance and obscurity. Among the many interesting ancient relics of Cortona are the remains of the Cyclopean walls which surrounded the original city, and upon which those around the present city are built, a temple of Bacchus, and a sepulchral chamber of sandstone of Etruscan architecture.

CORTONA, Pietro Berrettini da, an Italian painter and architect, born in Cortona, Nov. 1, 1596, died in Rome, May 16, 1669. While a boy he was put to study painting at Rome, and at an early age excited the admiration of Pope Urban VIII., who employed him to decorate a chapel in the church of St. Bibiena, and also to execute the frescoes on the ceiling of the grand saloon of the Barberini palace. These, and the frescoes in the Pitti palace in Florence, are among the most remarkable specimens of decorative art of the 17th century. Among his oil paintings "The Conversion of Saint Paul" is celebrated. As an architect his finest work was the restoration of the church of Santa Maria della Pace in Rome.

CORUNDUM, the name of a mineral species which includes several varieties, as sapphire, emery, corundum, &c. They consist of alumina in a greater or less degree of purity. Sapphire is crystallized alumina, free of impurities; emery, a granular variety; and corundum comprises the opaque qualities which are for the most part of dark colors. They are remarkable for their hardness, being inferior only to the diamond in this respect. (See EMERALD, EMERY, and SAPPHIRE.)

CORUNNA (Span. *Coruña*). **I.** A N. W. province of Spain, in Galicia, bounded N. and W. by the Atlantic, and bordering on the provinces of Lugo and Pontevedra; area, 3,078 sq. m.; pop. in 1867, 609,337. The coast is rugged and irregular, the interior traversed by high mountains, interspersed with fertile valleys and plains, watered by the Ulla, Tambre, Lezaro or Jallas, Mandeo, and Mero, and in some places covered with forests. The principal crops are beans, peas, potatoes, hemp, flax, fruit, and most kinds of grain except wheat and barley. A large proportion of the soil is occupied by pastures. The manufactures are hardware, earthenware, hats, shoes, leather, rope, and sail cloth; ships are also built. Iron, copper, silver, and coal are mined to a small extent. Wild boars and wolves infest the forests. Besides Corunna, the capital, the chief towns are Santiago de Compostela and Ferrol. **II.** A city (Lat. *Coronium*), capital of the province, a seaport at the entrance to the estuary of the Mero river, 315 m. N. W. of Madrid; pop. about 40,000. It is nearly connected with Madrid by rail, a railway being in course of construction intended to connect it with the Leon and Palencia branch line, and through the latter with the main northern trunk, between Valladolid and Burgos. It consists of an upper and a lower town, the former built on the E. side of a small peninsula, and the latter on the isthmus connecting the peninsula with the mainland. The upper town is walled, and contains the citadel, the principal government

buildings, and the finest of the churches. The lower quarter, once a mere collection of fishers' huts, is now better built. In this are the theatre, captain general's palace, custom house, arsenal, barracks, and court house. The town also contains a number of convents, two hospitals, a prison, a house of correction, schools of design, mathematics, and navigation, and several literary and charitable institutions. On the N. shore of the peninsula is a lighthouse 92 ft. high, called the tower of Hercules, and supposed to be of Roman construction. It is visible in clear weather from a distance of 60 m. The harbor, formed by Corunna bay, and protected by Fort St. Anthony on an insulated rock at its entrance, and Fort St. Diego on the mainland, is deep, spacious, and safe. The sea wall, begun in 1862, embracing the whole front of the new town, was completed in 1870, and the former beach has been converted into



Corunna.

a public garden. A new dock and a wharf nearly 1,100 ft. long have been built, and other wharves are in course of construction. Handsome private dwellings and public edifices have been erected since 1868, the latter including barracks for 3,500 soldiers, with a military hospital. About 5,000 emigrants embark annually from the port for Havana, Montevideo, and Buenos Ayres. The imports for the year ending Sept. 30, 1871, chiefly tobacco, hides, sugar, cocoa, and codfish, amounted to $2,492,814, and the exports, chiefly cattle and eggs, to $2,654,655. The chief branches of industry are ship building, fisheries, particularly for sardines, the salting of provisions, and the manufacture of glass, soap, starch, cotton, cigars, iron, oil cloth, and hats.—The famous Spanish armada was refitted in the bay of Corunna in June, 1588, prior to setting sail for England. On Jan. 16, 1809, a British army under Sir John Moore, after repulsing in an obstinate encounter a numerically superior French force commanded by Marshal Soult, succeeded in embarking here. The British general was killed in battle by a cannon shot and interred in the citadel, where an inscription to his memory was placed by Soult, to whom the city surrendered three days later. A monument was afterward erected to Sir John Moore by the English government.

CORVINUS, Matthias. See MATTHIAS CORVINUS.

CORVIN-WIERSBITZKI, Otto Julius Bernhard, a German revolutionist, born at Gumbinnen, East Prussia, in 1812. He was a lieutenant in the Prussian army from 1830 to 1835, participated in the Baden insurrections of 1848 and 1849, and was sentenced to death by court martial; but in consideration of his having prompted the surrender of Rastadt to the authorities, the punishment was commuted to 10 years' imprisonment in the penitentiary, from which he was released in 1855. During the American civil war he was correspondent of the Augsburg *Allgemeine Zeitung*, residing in Washington, and he acted in the same capacity during the Franco-German war. With Hell he published the *Illustrirte Weltgeschichte* in numbers (Leipsic, 1844–'51). His other principal work is *Aus dem Leben eines Volkskämpfers* (4 vols., Amsterdam, 1861), which has also appeared in English.

CORVISART - DESMARETS, Jean Nicolas, baron, a French physician, born near Vouziers, in Champagne, Feb. 15, 1755, died at Courbevoie, near Paris, Sept. 18, 1821. At the age of 33 he became physician at the hospital of La Charité. In 1800 he was made physician to Napoleon, who in 1802 gave him the title of baron. His principal works are a treatise on disease of the heart, and a translation of Auenbrugger's method of ascertaining diseases of the chest by percussion, to which he added valuable notes.

CORWIN, Thomas, an American statesman, born in Bourbon co., Ky., July 29, 1794, died in Washington, Dec. 18, 1865. His immediate ancestors went from New Jersey to Pennsylvania, from thence to Kentucky, and from thence to Ohio. His father, Matthias Corwin, for many years a member of the Ohio legislature, removed with his family to what was then the Northwestern territory in 1798, and settled near where the town of Lebanon, Warren co., Ohio, now is. Thomas Corwin was reared on a farm, where he was kept at hard labor except in the winter months, when he

studied at school or at home, as opportunity offered. Though there were no good schools in the country, then almost a wilderness, he nevertheless acquired much solid information. In 1814 he entered the clerk's office of Warren co., then or soon after under the charge of an elder brother, Matthias Corwin, jr. The next year he commenced the study of the law, and in May, 1818, he was admitted to the bar. As a lawyer, besides his power as an advocate, he was distinguished for keenness of discrimination in the use of authorities and the management of evidence. In 1822 he was elected to the house of representatives of the state legislature, and soon distinguished himself in a speech in opposition to a bill proposing to restore public whipping as a punishment for small crimes. After serving in the state legislature for seven years, he was elected to congress in 1830. He had supported Mr. Clay for president in 1824, when he received the electoral vote of Ohio; and in the presidential election of 1828 he had been the supporter of John Quincy Adams. During the administrations of Jackson and Van Buren he uniformly acted in concert with the whigs in regard to all controverted political questions. In 1836, and again in 1840, he supported Gen. Harrison. Having been selected in 1840 as the candidate of the whigs for governor of Ohio, he delivered a brilliant speech in defence of Gen. Harrison, in reply to an attack of Gen. Crary of Michigan; and during the presidential canvass of that year he made speeches in almost every county of the state, discussing the political topics of the day, and exercising an effective influence in favor of Gen. Harrison. He was elected governor, and in 1845 United States senator; and in 1846, when war with Mexico was affirmed to exist by the act of Mexico, he denounced the policy of the executive and the party in power as an attempt to possess themselves of Mexican territory which they had failed to purchase by treaty. In 1848 he supported Gen. Taylor as a candidate for the presidency; and on the death of President Taylor in July, 1850, he received from Mr. Fillmore the office of secretary of the treasury, which he filled till March 4, 1853, when he returned to Lebanon, Ohio, where he again engaged in the practice of his profession. In 1858 he was again elected to the house of representatives in congress, where he served till 1861, when he was appointed minister to Mexico. He remained there until the arrival of Maximilian, when he returned to Washington and resumed the practice of law. He supported Abraham Lincoln for the presidency in 1860, but was conservative on the subject of slavery, and favored a compromise in order to avert a conflict.

CORYAT, Thomas, an eccentric English traveller, who called himself the "Odcombian legstretcher," born at Odcombe, Somersetshire, in 1577, died at Surat, India, in December, 1617. He was the son of the rector of his native town, and received an excellent university education. In his first journey, which occupied five months in 1608, he travelled nearly 2,000 miles in Europe, about one half of which distance he walked. On his second journey, 1612 to 1617, he explored the Levant, resided for a time in Constantinople, examined the vestiges of Troy, visited as many of the sites of the seven churches of Asia Minor as he could discover, and proceeded through Persia to India, where he died of dysentery. He published in 1611 some of his travelling experiences in a curious book entitled "Coryat's Crudities," &c., to which quizzical verses in various ancient and modern languages, written by Ben Jonson, Donne, and other authors, are appended. The latter were afterward published separately under the title of "Odcombian Banquet," with an advertisement reflecting satirically upon Coryat, who was a butt of the wits with whom he associated in London. In a second volume, however, entitled "Cramb, or Colwort twice Sodden," published the same year, he protested that the verses were appended to the former without his consent.

CORYBANTES, in antiquity, the priests of Cybele or Rhea in Phrygia. They celebrated the worship of this goddess by arraying themselves in full armor and performing licentious dances in the forests and on the mountains, to the music of flutes, drums, and cymbals. Persons under the influence of the corybantic spirit became demented, according to Maximus Tyrius, whenever they heard the sound of any of their sacred instruments; and the Greek and Latin equivalent of the verb "to corybantize" was hence used by the ancients in reference to any one who was transported by or possessed with a devil. When the worship of Cybele was introduced at Rome, her priests were called Galli, probably from the river Gallus in Phrygia, regarding which it was fabled that all who drank of its waters became mad and emasculated themselves, two attributes held indispensable to the Cybelean priesthood. Mythical Corybantes are also mentioned in the legends of Crete, in connection with the Curetes. Many suppose that Corybantes, Curetes, Cabiri, Idæan Dactyli, and Telchines are identical terms, and refer to the same order of priests.

CORYELL, a central county of Texas, watered by Leon river and several of its tributaries; area, 960 sq. m.; pop. in 1870, 4,124, of whom 279 were colored. It has a rolling or hilly surface, well diversified with prairie and timber land, and a fertile soil suitable for Indian corn and wheat. Stock raising is the principal business. Fine building stone is abundant. The chief productions in 1870 were 5,778 bushels of wheat, 109,900 of Indian corn, 34,061 lbs. of butter, and 378 bales of cotton. There were 3,469 horses, 3,046 milch cows, 22,138 other cattle, 2,889 sheep, and 6,275 swine. Capital, Gatesville.

CORYPHÆUS, the leader of the chorus in the dramatic and religious festivals of ancient Athens. He at first performed the various

functions which now belong to manager, prompter, and scene decorator. Subsequently, however, the coryphæus yielded his high office to the choragus, and his duty became limited to the leadership of the dramatic chorus.

COS, Stanko, or **Stanchio** (called *Meropis* in Thucydides, and *Nymphæa* in Pliny), an island of Asiatic Turkey, in the Ægean sea, near the coast of Asia Minor, in lat. (W. point) 36° 49′ 54″ N., lon. 26° 53′ 49″ E.; length about 23 m., circumference 65 m.; area, about 90 sq. m.; pop. about 8,000. It produces silk, salt, cattle, and wine resembling lachryma Christi, and exports fruits and wine to Egypt. The capital of the island, of the same name, in the northeast, has a mixed Greek and Turkish population, is the seat of a Greek bishop and of a Turkish pasha, and contains many relics of the Grecian era. Cos is famous now as it was in antiquity for its fertility, its wines, dyes, and delicate transparent fabrics. Though mountainous in the south and west, the island in its extensive fruitful plains in the north and east still retains that natural productiveness mentioned by Strabo. The ancient city of Cos contained the famous temple of Æsculapius, with its celebrated school of physicians, and its votive anatomical models. It was colonized by Æolians, joined the Dorian confederacy, was first fortified by Alcibiades, became a free state under the emperor Claudius, was destroyed by an earthquake, and rebuilt by Antoninus Pius. The island was the birthplace of Apelles, Philetas, and Hippocrates.

COSEL, a town of Prussia. See Kosel.

COSEL, Countess of, mistress of Augustus II., king of Poland and elector of Saxony, born in Holstein in 1680, died in the prison of Stolpen in March, 1765. She was a daughter of the Danish colonel Brockdorf, and married the Saxon minister Von Hoymb; but on forming an illicit connection with Augustus she was divorced from her husband, assumed the name of Madame de Cosel, was presented by the emperor Joseph I. with the title of countess, and by her lover with a magnificent palace at Dresden (still known there under her name), and held for a number of years sovereign sway over the heart and the councils of Augustus, to whom she bore three children, until her extravagance, arrogance, and jealousy caused her to be imprisoned in the fortress of Stolpen (1716). She was in the enjoyment of a pension, which continued to be paid to her after the death of Augustus in 1733. Frederick the Great, during his occupation of Saxony, paid it in depreciated coins called Ephraims, after a Jew of Leipsic of the name of Ephraim, by whom they were made. Incensed at the deception, the countess nailed the coins on the walls of her prison. She seemed, however, so fond of the society of the same Ephraim and of other Jews, that she was supposed to have become a convert to Judaism. The coins known as the *florins de Cosel*, struck from 1705 to 1707, and bearing an obscene device, were issued by King Augustus in payment of a wager with his mistress.

COSENZA. I. A S. province of Italy (also known as Calabria Citeriore), bounded N. by the province of Potenza, E. by the gulf of Taranto, S. by Catanzaro, and W. by the Mediterranean; area, 2,841 sq. m.; pop. in 1872, 440,272. The greater part of the province is mountainous, the Apennines traversing it in its entire length; near the gulf of Taranto it has an extensive and beautiful plain. The principal river is the Crati; among the smaller ones are the Busento, Esaro, and Trionto. The vine, the olive, silk, and fruits of all kinds are cultivated, and the breeding of horses, mules, and hogs is pursued on a large scale. The Sila mountain contains alabaster and mineral salt. The province is divided into the districts of Castrovillari, Cosenza, Paola, and Rossano. **II.** A city (anc. *Consentia*), capital of the province, situated at the confluence of the rivers Crati and Busento, in a valley of its own name, surrounded by vine-covered hills, 11 m. from the Mediterranean, and 150 m. S. E. of Naples; pop. about 10,000. Two bridges of stone unite the two portions of the city. Cosenza is the seat of an archbishop, and possesses a handsome court house, a cathedral, several churches and convents, a theatre, and several hospitals. The royal college has six professors, and there are also two academies and other educational establishments. It is a fortified city, with a citadel of considerable strength. Extensive silk works are carried on, and cutlery and earthenware are manufactured. Wine, flax, and manna are produced in the surrounding district. The extensive forest region of Sila adjoins the town.—Consentia was the capital of the Bruttii, and taken from them by the Romans. Alaric the Goth besieged it, and died within its walls (410). The Saracens took the city, and were dispossessed by the Normans. Isabella of Aragon, the wife of Philip III. of France, died here on her husband's return from Tunis with the remains of St. Louis.

COSHOCTON, an E. central county of Ohio; area, 516 sq. m.; pop. in 1870, 23,600. It has an undulating and in some places hilly surface, and the soil varies between sand and clay, but is generally productive. It is drained by Muskingum river and its branches, Vernon river, and several small streams. Iron and coal are the most important minerals. It is traversed by the Ohio canal and the Pittsburgh, Cincinnati and St. Louis railroad. The chief productions in 1870 were 332,391 bushels of wheat, 1,098,184 of Indian corn, 401,308 of oats, 108,471 of potatoes, 27,013 tons of hay, 676,102 lbs. of butter, and 547,709 of wool. There were 8,836 horses, 8,022 milch cows, 12,251 other cattle, 132,173 sheep, and 22,219 swine; 7 manufactories of carriages and wagons, 1 of paper, 1 of sashes, doors, and blinds, 6 of tin, copper, and sheet-iron ware, 1 of woollen goods, 7 flour mills, 7 saw mills, and 5 tanneries. Capital, Coshocton.

COSIN, John, D. D., an English prelate, born in Norwich, Nov. 30, 1594, died Jan. 15, 1672. He was educated at Cambridge, where he became fellow of Gonville and Caius college; was librarian of Bishop Overall of Lichfield, 1616–'19; and became archdeacon of the East Riding of Yorkshire in 1624. By command of Charles I. he prepared a manual of "Private Devotions" (1627). In 1634 he became master of St. Peter's college, Cambridge, and six years later dean of Peterborough and vice-chancellor of the university. Being a devoted loyalist, he was deprived of his preferments by the party in power and went to Paris, where he occupied himself in performing clerical duties among his exiled countrymen. On the restoration of Charles II. he was made bishop of Durham (1660). Among his works best known are "Scholastical History of the Canon of Holy Scripture" (1657), and "History of Popish Transubstantiation" (1675).

COSMAS OF PRAGUE, a Bohemian ecclesiastic, and the earliest historian of his country, born in 1045, died Oct. 21, 1126. The first part of his work, the *Chronicon Bohemorum*, contains the most ancient traditions of Bohemia to 1038; the second part carries the chronicles to 1092, and the third and last part to 1125. The first edition was published by Freher in 1602, and the last edition is contained in Pelzel and Dobrowsky's first volume of *Scriptores Rerum Bohemicarum* (Prague, 1783).

COSMO. See Medici.

COSSACKS, warlike tribes of S. and S. E. Russia, those of Little Russia (Malorussians) and those of the Don forming the chief divisions. In their own as well as in the Russian language they are called Kazaks, which in Turkish designates robbers, and in the dialect of the Tartars free, light mounted warriors. Whether this is the origin of their name, or whether they have inherited it from a more eastern people, is a matter of controversy, as well as whether they came into Russia as a horde from the east, and spread as far as the Dnieper, or whether they have been conglomerated into a national body through a long course of time, from various fragments of roving or fugitive neighboring tribes. Certain it is that about the middle of the 14th century the banks of the southern Dnieper and of its tributaries were settled by Russians, who fled before the invading Poles, built villages and towns, were joined by people from the neighboring borders, and thus formed the bulk of the warlike Malorussian tribe, which so often appears in the border wars of the Poles, Russians, and Crimean Tartars. Stephen Báthori, one of the ablest kings of Poland (1576–'86), constituted these Cossacks of the Ukraine the guards of the S. E. Polish frontier, giving them a regular military organization under hetmans (Russ. *attamans*, or chiefs). But the extortions of Polish officials, and the persecutions by Polish Jesuits under the following reigns, exasperated the Cossacks, who belonged to the Greek church, and their insurrection under Chmielnicki (1648) was stained with the wildest deeds, and ended with their submission to Russia (1654). But the new rule proved no less oppressive, and a part of the tribe was ready to follow Mazeppa, their attaman, and to join Charles XII. against Peter the Great. For this attempt, which failed, the czar took bloody revenge after his victory at Poltava, and many of the Cossacks fled to the Crimea, whence they were allowed to return under the reign of Anna. Of these western Cossacks, the Zaporogians (in Slavic, those beyond the cascades, viz., of the Dnieper) were regarded at all times as the boldest, fiercest, and most predatory. They despised marriage, and recruited their numbers by kidnapping children. The eastern Cossacks appear in the service of the Russian czars as early as the first half of the 16th century. Before the severity of Ivan



Cossack Man and Woman.

the Terrible, the adventurer Yermak fled with a small band of Cossacks to Siberia, roved over its vast plains, and gave it to Russia for his pardon. Some of their revolts were as dangerous to Russia as were those of the western Cossacks to Poland; and that under Pugatcheff, during the reign of Catharine II., shook the empire to its very foundation. Since the bloody suppression of this revolt, the chief object of the government has been gradually to deprive them of their independence, by transforming their bodies into more regular military organizations; and the dignity of chief attaman is now vested in the crown prince of Russia. The eastern division, which has been strengthened by transplantations from the western under Catharine II., forms now the great bulk of the Cossacks. Their chief province is the vast steppes W. of the Don, which gives the name to the tribe, with Tcher-

kask, a kind of Venice near the mouth of that river, as capital, now constituting a government of European Russia, with an area of 59,654 sq. m., and a population in 1867 of 1,010,135. Southeast of them live the Tchernomoreans (in Russian, those of the Black sea); east of these the Terekians; the Volgaic and Uralian tribes live near the lower course of the rivers from which their names are derived; others still further east. They are divided into districts and *stanitzas* (settlements). By a ukase of Oct. 21, 1868, the districts E. of the Ural and Siberian Cossacks were, conjointly with the districts of the Orenburg and Siberian Kirghizes, organized into the four provinces of Ural, Turgai, Akmolinsk, and Semipalatinsk.—The Cossacks are equal among themselves, elect their officers, excepting the attaman (see ATTAMAN), and are free from taxation. Their chief occupations in time of peace are fishing and breeding of cattle; agriculture, commerce, and industry are little developed. Horses form their chief riches. In times of war all men from 18 to 50 years of age are bound to serve on horseback. They provide their armor at their own expense, but have the free choice of their dress. Their arms are a lance 10 to 12 feet long, a carbine, pistols, and a sabre. Their horses are small, but swift and indefatigable. They are divided into *polks* (regiments), subdivided into hundreds, fifties, and tens. They are particularly expert in surprising and intercepting small detachments, in annoying an army on the march, and in deranging or pursuing an enemy in retreat or in flight. It is well known how dreadful they were to the French retreating from Moscow. The number of all the Cossacks of Russia is variously estimated at 1½ to 3 millions. Their language is the Russian intermixed with Polish and Tartar words. They adhere to the Greek creed. They are strong, hardy, and active. They wear beards, round caps, and wide trousers.

COSSÉ, Charles de, count de Brissac, a marshal of France, born in Anjou in 1505, died Dec. 31, 1563. He served at the siege of Naples in 1528, was made colonel general of the French infantry in 1542, and fought against the English and imperialists in Champagne and Flanders in 1544–'6. In 1547 he was made grand master of the artillery; in 1550 marshal of France and governor general of Piedmont, where he proved himself superior to his opponent, the marquis of Gonzaga; in 1559 governor of Picardy, in 1562 commander of Paris, and in 1563 governor of Normandy. Under Henry II. he owed his position to Diana of Poitiers, with whom he was a favorite. His reputation as a general was such that princes and nobles served under him to learn the art of war.

COSSIPORE, a suburb of Calcutta, India, on the left bank of the Hoogly, 6 m. N. of Fort William. It contains a foundery for the casting of ordnance for the military service of India, which produces guns of excellent workmanship. The company's artillery officers are here instructed in the casting of guns. Cossipore is a sacred place in Hindoo estimation. It has numerous temples, whither pilgrims resort from all quarters, and an active trade with N. W. India.

COSTA, Sir **Michael,** a musical director and composer, born at the village of La Cerra, near Naples, in 1806. He received his professional education at the royal academy of music in Naples, and also under Tritto, a teacher of some reputation. Having produced two cantatas, *L'Immagine* and *Il delitto punito*, he became director of the orchestra in one of the minor Neapolitan theatres, and finally wrote for the San Carlo an opera entitled *Malvina*, which met with little success. In 1828 he went to England, where he has since then remained, devoted to operatic, orchestral, and oratorio music. In each of these departments of the art he has taken a conspicuous place. In 1831 he became conductor of Her Majesty's theatre, in 1846 of the philharmonic concerts, and in 1847 of the royal Italian opera, Covent Garden. He was also appointed presiding accompanist at the court concerts. In 1855 his oratorio "Eli" was produced at the Birmingham musical festival, adding greatly to the composer's reputation, which was further enhanced by the oratorio of "Naaman," brought out in 1864. Both of these oratorios have been performed in Boston and other cities of the United States. In April, 1869, Costa was made a knight by the queen at Windsor castle, and in May he received from the king of Würtemberg the royal order of Frederick, as a mark of admiration for the manner in which the oratorio of "Eli" had been produced under his direction at Stuttgart. Besides those already mentioned, his principal works are the ballets "Kenilworth," *Une heure à Naples*, and *Sire Huon*. The opera *Malek Adel*, produced in 1837 at the royal academy of Paris, and afterward in London, was an amended version of his early work, *Malvina*. Though Grisi, Lablache, Rubini, and Tamburini were in the cast, they were unable to save the opera from a reception like that which it met on its first production at Naples. *Don Carlos*, brought out in London in 1844, met with a somewhat better success, and is esteemed as his best opera.

COSTA-CABRAL, Antonio Bernardo da, duke of Thomar, a Portuguese statesman, born at Fornos de Algodres, in the province of Beira, May 9, 1803. He was educated at the university of Coimbra, was appointed by Dom Pedro government attorney in the supreme court of Oporto, and officiated afterward as judge in one of the courts of Lisbon; was chosen to the house of representatives in 1835, where he acted with the conservatives; and was appointed prime minister March 7, 1838, but resigned two months afterward, when the queen adopted the liberal constitution of 1820. In

1841 he was reappointed, and on Jan. 19, 1842, instigated an insurrection in Oporto, which resulted in restoring the constitution promulgated in 1826. He now abolished the decree of the irremovability of the judges, arrogated to himself the supreme control of the army, established a censorship in the public schools, suppressed the universities, loaded the people with taxes, and was driven from power May 17, 1846. In 1849 he was again appointed prime minister, but only to inaugurate a still more stringent dictatorship. He offended the national pride by his conduct of the indemnity question with Great Britain and the United States; and his brother Sylva, minister of justice, forsaking him and becoming leader of the opposition, the cortes passed a vote of censure, and he resigned. The queen refusing his resignation, Saldanha set on foot a revolution at Cintra, which put an end to Costa-Cabral's administration, April 26, 1851. Saldanha became prime minister of Portugal, and Costa-Cabral fled to England, but returned to Lisbon in February, 1852, resumed his seat in the house of representatives, and became a member of the council of state. From 1859 to 1861 he was ambassador to Brazil. A Portuguese work on his career, *Apontamentos historicos*, has been partially translated into French under the title, *Costa-Cabral, Notes historiques* (Paris, 1846).

COSTA RICA, a republic of Central America, lying between lat. 8° 11′ and 11° 8′ N., and lon. 82° 28′ and 85° 45′ W., bounded N. by Nicaragua, N. E. by the Caribbean sea, S. E. by the United States of Colombia, and S. W. by the Pacific ocean; area, about 22,000 sq. m.; pop. estimated at 167,000. Capital, San José. The coasts, both on the Atlantic and Pacific, run N. W. and S. E., and are nearly parallel to each other. The breadth of the isthmus between them is at the widest part 100 m., at the narrowest 65 m. The Atlantic coast, which is comparatively low, is about 140 m. long, and is nearly straight, having but two harbors, Matina, on the river of the same name, and Limon, further N., the latter opened in 1857. The Pacific coast is longer and much more irregular, being penetrated by two considerable bays. Near the N. extremity the gulf of Nicoya or Salinas extends inland 60 or 70 m. and covers an area of not less than 1,200 sq. m.; near the S. extremity is the fine bay called the Golfo Dulce, with an area of 800 sq. m. Both of these are wide at the entrance, which opens toward the south, but grow gradually narrower toward the head, and each has a peninsula lying between it and the main ocean. Punta Arenas, the port of San José, on the E. side of the gulf of Nicoya, is the best harbor and the only port of entry on the Pacific coast. Caldera, S. of Punta Arenas, was once the principal seaport, but was abandoned in favor of the latter in 1840, on account of the unhealthfulness of its site. Other harbors are Golfo Dulce, Puerto Inglés, Las Mantas, La Culebra, Santa Helena, and Las Salinas; but none of them are open for imports, and vessels enter them only for the products of the country. In the gulfs of Nicoya and Dulce are a number of small islands, the largest of which is



Chira, near the head of the former.—The main range of the Andes, entering Costa Rica from the southeast, traverses its entire territory, widening toward the northwest, and forming a table land on which are situated the principal towns and centres of population. This plateau is intersected by a series of volcanic peaks, beginning with Orosi (8,650 ft. high), which overlooks Lake Nicaragua, and followed in order by La Vieja, Miravalles (4,700 ft.), Los Votos (9,840 ft.), Barba, Cartago or Irazu (11,400 ft.), Turrialba (12,500 ft.), Chirripo, and the peaks, possibly volcanic, of Blanco (11,740 ft.), Rovalo (7,021 ft.), and Chiriqui (11,265 ft.). The general elevation of the chain is from 5,000 to 6,000 ft. From the summit of Cartago both oceans can be seen. Near San José the range called the Cordillera de Candelaria detaches itself from the main chain, and trending W. terminates on the shores of the Pacific in the volcano of the Herradura (horseshoe). On the east the mountains of Matina stretch nearly to the Atlantic. The table land descends abruptly on the southeast, but forms terraces and gentle slopes on the northwest, subsiding gradually into the plains of Nicaragua. On the Pacific coast, especially around the gulf of Nicoya, the country is diversified with valleys and has a most picturesque appearance. The valley of San José is very beautiful. It occupies the centre of the mountainous region of the isthmus, at nearly an equal distance from both oceans, and at an elevation of 4,500 ft. The ground about the capital rises by great undulations eastward to the base of the volcano of Cartago, and northward by more gentle slopes to the Barba peaks; southward it swells to form the San Miguel mountains; and on the west it declines, the undulations gradually dis-

appear, and the broken ground becomes the level plains of the Carmen. Suddenly the inclination becomes more marked, and finally forms a dark and deep ravine, in which the roar of the waters of the Rio Grande is heard. From the Cordilleras surrounding the valley numerous streams find their way into this river, and through it into the Pacific. The upper part of the valley is laid out into coffee plantations, but the lower plains of the Carmen are used as grazing grounds. In the N., E., and S. parts of the republic are dense tropical forests and mountain fastnesses. Along the Atlantic coast is a low, level, marshy tract, covered with forests and subject to floods. A large part of the country is still unexplored, the forests being penetrable only by rough and obscure paths.—The rivers of Costa Rica, although numerous, are inconsiderable in size. The San Juan, which serves as the boundary between it and Nicaragua, is the only one navigable for steamers. The Sarapiqui rises in the hills not far N. of San José and flows nearly N. to join the San Juan, whence flat-bottomed barges ascend it to the capital. The San Carlos, another affluent of the San Juan, pursues a similar course, as does also the Rio Frio flowing into Lake Nicaragua. On the Pacific side the largest is the Tempisque, which rises at the foot of the volcano of Orosi and runs S. into the gulf of Nicoya. Smaller streams are the Rio Grande, Arena, Alvarado, Burica, Palmas, and Dulce, some of which are navigable for barges and canoes. On the Atlantic side are the Reventazon and Matina, which rise in the mountains of Cartago and are navigable for canoes for short distances, and the Purissima, Tortuga, Jimenez, Barbilla, and some others of no importance. There are several small lakes, Socorro, Surtidor, and Barba, at the E. base of the Cordilleras, and Ochomogo near Cartago.—Like the rest of Central America, Costa Rica is of volcanic formation and subject to frequent earthquakes. The soil is generally rich and very productive. Around San José it is a dark loam, largely intermixed with volcanic materials. Though less favored in mineral wealth than some of the neighboring countries, it contains some rich gold mines. The most important are those of Aguacate, in the forest of the same name, between San José and the Pacific coast, which were first worked in 1821. They were expected to yield $10,000,000 in 1872. Others are said to exist in the unexplored districts on the borders of Colombia, but nothing definite is known of them. Copper, iron, lead, and a brown bituminous coal are also found, but the mines are undeveloped. The mining in the republic is carried on by British capital. —The climate is as varied as the surface. It is mild and temperate in the uplands, and for a tropical country very healthy. In the district about the capital the thermometer ranges from 65° to 75° F. during the forenoon; from noon until 3 o'clock, during the hottest season, sometimes as high as 82° F.; and at night, during the coldest period, never below 57° F. On the coasts the average is much higher, but on the Pacific the thermometer seldom rises above 85° F. Both coasts are sickly, and are generally troubled throughout the year with fevers, which attack natives and strangers alike. The length and severity of the rainy season renders the climate very trying to the European and the North American. It sets in on the Pacific coast usually during the month of April, increases gradually in intensity up to August or September, breaks up toward the middle of November, and generally ends with that month. During this season the roads are nearly impassable. On the Atlantic slope these periods are nearly reversed, and a much larger amount of rain falls.—Costa Rica is rich in vegetable productions. The greater part of the country is covered with thick forests and jungles, excepting on the table lands, which are generally clear. All kinds of cabinet, timber, and dye woods peculiar to a tropical climate, and the cork tree and the valuable gums, grow to perfection on the low lands, and pines, oaks, and chestnuts crown the *tierras frias;* in the *tierras calientes* the cacao, vanilla, and banana have their most luxuriant growth; and in the *tierras templadas* the sugar cane, orange and lemon trees, and the coffee plant flourish in perfection. Nearly all the great tropical staples may be cultivated with profit. In the more elevated districts many of the products of the temperate zone are found.—The wild animals include the couguar or panther, wild cat, wolf, tapir, wild boar, fallow deer, monkey, sloth, hare, and squirrel. The wooded coasts swarm with venomous snakes and dangerous reptiles. Birds of the most beautiful plumage abound, and insects infest the lowlands. Great devastation is frequently caused by locusts. Among the birds are pelicans, vultures, hawks, parrots, pigeons, ducks, and quail; of domestic animals, the horses are inferior, but the mules are considered the finest in Central America. Immense herds of black cattle are raised, and sheep, goats, and swine of excellent quality abound. The various kinds of barnyard fowl grow to perfection. Fish are taken in the rivers and along the coasts; and the pearl oyster and a shell fish which yields a beautiful purple dye are found.—The population of Costa Rica may be classified as follows: 50,000 mestizoes, 13,000 negroes, 4,000 Indians, and the remainder whites. The latter, who are more numerous here than elsewhere in Central America, are, with the exception of a few Germans, French, and English, chiefly of pure Spanish extraction. It is said that the first Spanish settlers were from Galicia in the north of Spain; and the Costa Ricans appear to preserve many of the characteristics of that hardy and thrifty race. The Atlantic coast is occupied chiefly by Indians. There are also small tribes at the head waters of the San Juan and in some of the unexplored districts. Except-

ing among these Indians, who speak their native tongues, the language used is the Spanish. The predominant religion is the Roman Catholic, but the constitution, supported by special provisions of treaties with the United States and Great Britain, permits unrestricted freedom of worship. There is little religious bigotry, and among the higher and educated classes a general indifference in regard to spiritual matters prevails, and the clergy have lost much of their influence. The people are industrious and orderly, and are doing more for the improvement of the natural resources of their country than some other of the Central American states. The centre of population is the district of the Rio Grande about San José, where the climate is salubrious. It is estimated that nearly seven eighths of all the inhabitants of the republic are concentrated here within a territory of 50 m. in length by about 20 m. in breadth.—Coffee is the staple production and the chief source of wealth, the soil being peculiarly adapted for its growth. The first plantations were started in 1829. The experiment proving a success, the greater part of the enterprise and capital of the state was soon directed into this channel. In the plain of San José the trees flower in March and April, and the berry ripens in November and December. Almost all the labor connected with the picking of the coffee and its preparation for market is performed by women and girls. The crop of 1870 was 27,327,550 lbs.; that of 1858 did not exceed 11,500,000 lbs. Sugar cane, indigo, and cacao are raised on the Pacific coast, and on the plateau maize in large quantities, wheat, some barley and oats, and tobacco enough for home consumption, are produced. Potatoes are abundant and of good flavor, though small, and *frijoles* (a kind of bean) and the various vegetables and fruits of the temperate zone are plentiful. The excessive rains are unfavorable to the cultivation of cochineal, cotton, and the vine. Manufactures can scarcely be said to exist, being confined to the weaving of coarse cotton and woollen fabrics and the making of household utensils of wood and of earthenware.—The commerce of Costa Rica has been steadily increasing of late years. Of the exports, the greater part of the coffee goes to Great Britain; hides, deer skins, and India rubber are sent to the United States; and the remaining articles are taken in nearly equal proportions by the United States, South America, and Europe. The following shows the exports for the year ending Sept. 30, 1871:

ARTICLES.	Quantities.	Value in U. S. gold.
Coffee, sacks	187,135	$2,250,000
Hides, number	9,463	22,500
Deer skins, packages	39	2,400
Cedar, logs and planks	1,626	9,500
India rubber, packages	104	1,550
Pearl shells, plants, &c.	.....	2,500
Total value		$2,288,450

The value of the imports for 1871 was estimated at $2,225,000 in United States gold, of which about 70 per cent. were from Great Britain, 20 per cent. from France, Germany, and other European countries, 5 per cent. from the United States, and 5 per cent. from the other Central American republics. In 1871 the entries at Punta Arenas were: 80 steamers of 125,466 tons in the aggregate, and 35 sailing vessels of 12,541 tons; clearances, 80 steamers of 125,466 tons, and 34 sailing vessels of 12,232 tons. Besides the steamers of the Panama railway company, which make regular tri-monthly trips between Panama and the Central American ports on the Pacific, a steamer of the Pacific Mail steamship company now touches once a month at Punta Arenas. This is regarded as very favorable for the commerce of Costa Rica, for whose coffee it is presumed that San Francisco will soon become the principal market.—Means of communication with the interior are very limited, there being only one good carriage road, that from San José to Punta Arenas. On the eastern side merchandise can be transported with difficulty to Limon and to San Juan del Norte (Greytown) by means of barges on the Sarapiquí to the San Juan, and thence in small steamers down that river. The only alternative is to send across the Panama railway at ruinous rates, or by the long and perilous route around Cape Horn. This will soon be remedied, as a railway is now building to connect San José with Limon on the Atlantic, to be extended hereafter to Punta Arenas on the Pacific. Two branches of this road, from Cartago to San José and thence to Alajuela, are already (1873) open to public traffic, and the rest is in rapid progress. Carriage roads and other public works are also in course of construction. A telegraph line is in operation between Cartago and Punta Arenas, and a line is projected from Cartago to Limon.—Education is at a low ebb, although efforts have been made of late to increase and to improve the character of the public schools. Primary schools are established in all the principal towns and in most of the *barrios* (villages in the vicinity of cities), generally for both sexes; but, in consequence of inadequate appropriations and the lack of suitable teachers, they are not very well attended. Young men destined for the liberal professions are usually sent to Guatemala, the United States, or Europe for education. There is in San José a national university, supported by the government, where are taught mathematics, philosophy, physics, chemistry, the ancient and modern languages, and political science. A medical course was begun in 1872. There is a museum and a chemical laboratory connected with this institution. There are also several grammar schools in the country, the principal of which are the collegio de San Luis in Cartago and that in Heredia, both under the direction of able Spanish professors. The establishment of a national library is under

consideration.—Costa Rica is divided administratively into six provinces: San José, Cartago, Alajuela, Heredia, Guanacaste, and Punta Arenas. The principal cities are San José, Cartago, Alajuela, and Heredia. San José has about 26,000 inhabitants; Cartago, the former capital and the oldest town of Costa Rica, has now only about 5,000; the others have about 10,000 each. The government consists of an executive, called president, elected for four years, and a congress of two chambers, a senate and a house of representatives, the first having 25 and the second 29 members, chosen by the people. The vice president, whose term of office is also four years, is chairman of the senate. The president is assisted by two ministers, nominated by himself, the first having charge of the departments of finance, justice, and foreign affairs, the second of those of the army and navy, the interior, and public works. There is a court of justice in San José, composed of three degrees, a court of common pleas, a court of appeals, and a supreme court; and in each parish there is a judge called *juiz de partido*. The financial situation of the country, according to the official publications of 1872, is very promising. The estimated budget for 1872–'3, including the port duty of 50 cents per quintal on coffee and a few other imposts of recent creation, was $2,700,000, a sum sufficient to pay the expenses of the public administration and the interest of the national debt, and to provide for the sinking fund. The principal sources of revenue are customs duties, the monopoly of liquors, tobacco, and salt, and the post office. In 1872 the government increased the salaries of its official employees, disbursed $400,000 for internal improvements, and had a surplus of $300,000 over and above all claims. The public debt at the end of 1869 was about $3,000,000, of which $2,895,000 was internal. The whole of this debt has been liquidated. In 1872 a 7 per cent. loan of £2,400,000, issued at 82, was contracted through the house of Knowles and Porter of London. In addition to this there is a 6 per cent. loan of the nominal amount of £1,000,000, also contracted in England. Both loans were raised for the purpose of constructing the railway and other public works. There are two banks in San José, the National and the Anglo-Costarican. Both discount commercial paper freely at the legal rate of interest, 12 per cent., to which rate the former is restricted, but with the latter it is optional.—Costa Rica was discovered by Christopher Columbus on his fourth voyage. On Oct. 5, 1502, after remaining a short time at anchor in the harbor of San Juan, he sailed down the coast, to which, from the specimens of gold he received at the several points where he landed, he gave the name of La Costa Rica y Castilla de Oro. For its history as a province of Spain, see GUATEMALA, under which name all the country between the S. border of Costa Rica and the N. boundary of Chiapas, Mexico, was included previous to 1821. During the crisis which followed the declaration of independence of the Spanish American colonies in that year, Costa Rica preserved a prudent neutrality, but in November became with the other Central American States a part of the republic of Mexico. A separation was effected July 1, 1823, after the downfall of the brief empire of Iturbide, and a confederation was formed of the five states of Guatemala, San Salvador, Honduras, Nicaragua, and Costa Rica, and the territory of Mosquitia. This lasted till 1840, when Costa Rica withdrew and formed an independent government. Her president, Don Braulio Carillo, reorganized the administration and honorably satisfied the creditors of the confederation for the part of the federal debt assessed to Costa Rica. In 1847 a constitution was adopted, providing for a president and vice president, elected for six years, and a congress consisting of a house of representative only, of 12 members. Various modifications were made in 1859, 1860, and 1863, the presidential term being changed first to three years, and finally to four years. The congress too has undergone numerous reforms. Of late years there have been constant changes in the executive, in consequence of civil wars and insurrections, scarcely any president having been permitted to serve the full term of office provided by the constitution. The present president, Gen. Tomas Guardia, was elected in April, 1872, for the term ending in 1876. In 1856 Costa Rica, fearing for her own safety, declared war against the filibuster William Walker, who had taken possession of Nicaragua. The Costa Rican forces, under Don Juan Mora, the president, met Walker's troops under Col. Schlesinger near the hacienda of Santa Rosa, in Guanacaste, routed them, followed them into Nicaragua, and in conjunction with the forces of the other states surrounded Walker in the city of Rivas and forced his surrender to the commander of the United States sloop of war St. Mary's, under whose safeguard he evacuated the country. On Feb. 17, 1872, the ministers plenipotentiary of Costa Rica, Guatemala, Honduras, and San Salvador met in the city of La Union in San Salvador, and signed a treaty for the formation of a Central American union, consisting of the several independent republics. Nicaragua was not represented, but provision was made for her adhesion, and an envoy appointed to visit that government to secure it. The main objects of this union are to preserve the autonomy and integrity of Central American territory, to maintain peace in the several states, and to insure to each a republican form of government, to guarantee to every citizen full political liberty, and to promote progress, moral, intellectual, and material. Slavery is denounced, confiscation abolished, and the extradition of political offenders prohibited. The following are declared to be national undertakings: the building of a line of telegraph from Colon, in Colombia, across Central Amer-

ica to the borders of Mexico; the construction of a highway connecting the capitals of the several republics; the establishment of a line of steamers on the Pacific coast; and the excavation of an interoceanic canal by way of the San Juan river. Provision was made for the convocation of a Central American congress, to consist of three principal representatives and as many substitutes from each state, to frame laws in conformity with the stipulations of the treaty, and to provide for the maintenance of the national authority.

COSTE, Jean Jacques Marie Cyprien Victor, a French naturalist, born at Castries, May 10, 1807, died Sept. 23, 1873. He was noted for his researches in embryology, and for his efforts in behalf of the propagation of fishes in France. In compliance with a report drawn up by Coste and Milne-Edwards, an establishment was organized by the government at Huningue in 1851, from which 600,000 salmon and trout were placed in the river Rhône within two years. Similar experiments in the lake and river of the Bois de Boulogne were commenced by Coste in 1855. In 1862 he was made inspector general of the river and coast fisheries. A member of the academy of sciences from Feb. 10, 1851, M. Coste wrote much on natural history. His *Cours d'embryogénie comparée*, in 1837, was followed the next year by *Ovologie du kanguroo*, written in reply to letters from Robert Brown. Among his other productions are *Instructions pratiques sur la pisciculture* (1853; 2d ed., 1856), and *Voyage d'exploration sur le littoral de la France et de l'Italie* (1855).

COSTELLO. I. Dudley, a British author and journalist, born in Ireland in 1803, died in London in September, 1865. The son of an officer, he entered the army, and served on various foreign stations, where he devoted his leisure to literature and art. Leaving the army, he resided for some time in Paris, where he was employed by Cuvier as draughtsman and amanuensis. Removing to London in 1833, he contributed to many journals and periodicals, and during 30 years to the "Examiner." His best known works of fiction are: "Stories from a Screen" (1855); "The Millionaire" (1858); "Faint Heart never won Fair Lady," dramatized by Planché (1859); and "Holidays with Hobgoblins" (1860). He also published a book of travel, "Italy from the Alps to the Tiber" (1861). **II. Louisa Stuart,** a British authoress, sister of the preceding, born in Ireland in 1815, died at Boulogne, France, April 24, 1870. Her early poems attracted the attention of Thomas Moore, to whom in 1835 she dedicated her "Specimens of the Early Poetry of France." After residing some time with her brother in Paris she went to London in 1835, where she at first maintained herself by painting miniatures, but soon abandoned the pencil for the pen. She wrote many songs and ballads, of which the "Queen of my Soul" is the most popular, and contributed largely to periodical literature. Her principal works are: "A Summer among the Bocages and Vines" (1840); "The Queen's Poisoner," of which the title was afterward changed to "The Queen Mother," a historical romance, the principal character of which is Catharine de' Medici (1841); "A Pilgrimage to Auvergne" (1842); "Béarn and the Pyrenees" (1844); "Memoirs of Eminent English Women" (1844); "The Rose Garden of Persia," containing translations from and biographical sketches of the most famous Persian poets (1845); "The Falls, Lakes, and Mountains of North Wales" (1845); "A Tour to and from Venice" (1846); "Jacques Cœur, the French Argonaut" (1847); "Clara Fane," a novel (1848); "Memoirs of Mary of Burgundy" (1853); "Anne of Brittany" (1855); and "The Lay of the Stork," a poem (1856).

COSTER, or **Koster, Laurens Janszoon,** a Dutch mechanic, considered by his countrymen the inventor of the art of printing, born in Haarlem about 1370, died about 1440. The account given of him is, that having made his invention in Haarlem previous to Gutenberg, he obliged the workmen in his employ under oath not to divulge his secret, but that after his death one of them, Johann Faust, or more probably Johann Gutenberg, took possession on a Christmas night of all his master's implements and types, and fled to Amsterdam, thence to Cologne, and afterward to Mentz, where he founded a printing establishment. The documents by which the supporters of Coster attempt to establish his claims are of comparatively recent discovery, but his countrymen have made this question one of national importance. A statue, with an inscription commemorative of the invention of printing, was raised at Haarlem in 1622 in his honor, opposite the house which he occupied. The academy of Haarlem having offered a prize for the best vindication of Coster's claim, it was awarded to Koning's *Verhandeling over het oorsprong*, &c., *der boekdrukkunst* (Haarlem, 1816; translated into French, 1819). A committee appointed by the authorities of Haarlem agreed upon 1423 as the year in which the art of printing had been invented by their townsman, and the fourth jubilee in honor of that event, called the "Coster festival," was celebrated with great pomp on July 11 and 12, 1823, when a monument to him was erected in the Haarlem wood. On July 16, 1856, a statue of him was erected in the market place of that city.—See *Gedenkschriften wegens het vierde eeuw-getijde van de uitvinding der boekdrukkunst* (Haarlem, 1824).

COSTILLA, a S. county of Colorado, bounded E. by the Rocky mountains, S. by New Mexico, and W. by the Rio Grande del Norte; area, more than 2,000 sq. m.; pop. in 1870, 1,779. It is situated in the beautiful San Luis park. The inhabitants are mostly Mexicans, speaking only Spanish; religion, Roman Catholic. The houses are of adobe. The settlements are scattered along Costilla, Culebra, Ute, Trinchera, and Sangre de Cristo creeks,

tributaries of the Rio Grande. Fort Garland, a government post, is in the county. Stock raising is the leading industry. The chief productions in 1870 were 7,420 bushels of wheat, 1,650 of Indian corn, 2,155 of oats, 45,020 lbs. of wool, 13,430 of butter, and 278 tons of hay. There were 228 horses, 1,672 milch cows, and 22,510 sheep. Capital, Costilla.

COSWAY, Richard, an English painter, born at Tiverton in 1740, died July 4, 1821. He removed to London, where he painted miniatures, in the execution of which he had no rival among his contemporaries. His wife, Maria Hadfield, also an artist, and a woman of great accomplishments, contributed for years to the exhibitions of the royal academy.

COTA, Rodrigo de, a Spanish poet, born at Toledo, died in 1470. He was the supposed author of the first and longest act of the *Celestina*, a dramatic story in 21 acts or parts, originally called the "Tragi-comedy of Calisto and Melibœa." He was also supposed to have written the celebrated eclogue, *Mingo Revulgo*, a spirited satire against the latter part of the reign of Henry IV. of Castile; and the "Dialogue between Love and an Old Man" is attributed to him.

CÔTE-D'OR, an E. department of France, in Burgundy, bordering on the departments of Aube, Haute-Marne, Haute-Saône, Jura, Saône-et-Loire, Nièvre, and Yonne; area, 3,383 sq. m.; pop. in 1872, 374,510. A chain of hills, the Côte d'Or, crosses the department from S. W. to N. E., forming with the Vosges the watershed between the valleys of the Seine and Saône. In the S. W. is the eastern portion of the hill range known as Mont de Morvan. The rivers are numerous, but small, the Saône being the only one that is navigable. The Burgundy canal passes through the department from N. W. to S. E., uniting the river Yonne with the Saône. Most of the land is fertile, and well adapted to hemp, flax, and various kinds of fruit and grain. The culture of the vine is one of the principal employments. The Côte de Nuits and Côte Beaunoise, E. slopes of the Côte d'Or, are famous for their wines, the former producing the red wines, Romanée, Chambertin, and Nuits; the latter both red and white of unsurpassed quality. Large quantities of honey are obtained. A considerable portion of the country is occupied by forests of oak, beech, elm, &c. The mineral productions are iron, coal, marble, limestone, potters' clay, and several varieties of stone useful for building and for lithography. The iron mines are chiefly in the N. E. mountains, and are among the most productive in France. Large quantities of charcoal are consumed in the manufacture of malleable iron and steel at the furnaces and founderies near the mines. Other manufactures are linen, woollen, cotton, beet-root sugar, leather, and earthenware. The department is divided into the arrondissements of Dijon, Beaune, Châtillon-sur-Seine, and Semur. Capital, Dijon.

CÔTES-DU-NORD, a N. W. maritime department of France, in Brittany, bordering on the English channel and on the departments of Ille-et-Vilaine, Morbihan, and Finistère, and including the islands of Bréhat, Sept Isles, and others; area, 2,668 sq. m.; pop. in 1872, 622,295. The coast line is very much indented, the largest bay being St. Brieuc, at the head of which are the harbor and town of that name. In many places granite cliffs, with sandy beaches beneath, characterize the coast. The S. half is hilly, and on the S. W. boundary are the Montagnes Noires, which are at some points over 1,000 ft. high. The Rance is the only river of importance, though a few others are accessible at high tide to ships. The Ille and Rance canal connects the channel with the bay of Biscay, and a canal from Nantes to Brest crosses the department in the southwest. Agriculture is poorly conducted. Cider, hemp, and flax are the chief products, though sufficient oats, wheat, and rye are raised for home consumption. Excellent horses and cattle are reared, but the sheep are inferior. Asses are employed for farm work in some cantons. The coast fisheries of herring, pilchard, and mackerel are profitable. Hemp and flax are manufactured into sail cloth and linen, and leather, beet-root sugar, paper, and shoes are made. Iron and lead are mined to some extent. The people mostly speak the Bas Breton tongue, and are ignorant and superstitious, but make fine seamen and soldiers. The department is divided into the arrondissements of St. Brieuc, Dinan, Guingamp, Lannion, and Loudéac. Capital, St. Brieuc.

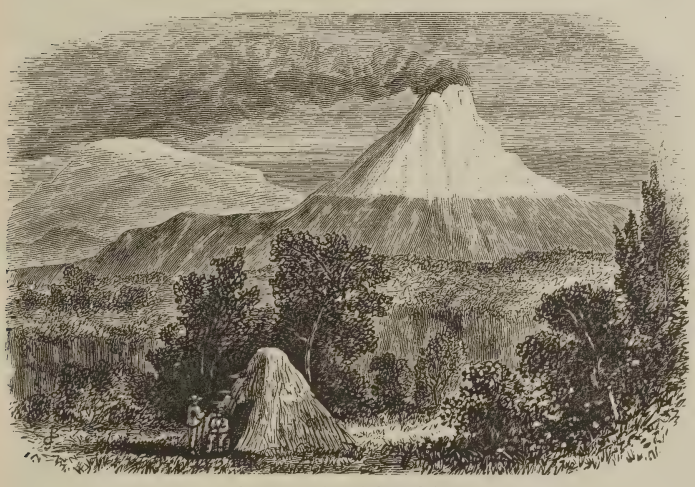
COTES, Roger, an English mathematician, born at Burbage, Leicestershire, July 10, 1682, died in Cambridge, June 5, 1716. He was educated at Cambridge, and in 1706 was made Plumian professor of astronomy, upon the establishment of the chair. In 1713 he took orders, and edited the second edition of Newton's *Principia*, with a preface treating of gravitation and the objections to it; other works of his were an account of the great meteor of 1715, and his *Harmonia Mensurarum*, which was the earliest work of importance on the application of logarithms and of the properties of the circle to the calculus of fluents.

COTHURNUS, a high laced boot worn by the ancients. It rose nearly to the knee, was laced in front, and highly ornamented. The soles were made sometimes very thick for the use of tragic actors, who wished to increase their apparent height; hence it became the symbol for tragedy, as the sock was for comedy.

COTIN, Charles, a French abbé, born in Paris in 1604, died there in 1682. He became the butt of the satire of Boileau, consequent upon his advice to him to adopt a different style of writing. In his play of the *Femmes savantes*, Molière makes Trissotin imitate Cotin's speech and manner. Cotin was almoner to the king, a member of the French academy, and author of a volume of poems and of several prose

works; but his writings were in bad taste and below mediocrity.

COTOPAXI, a volcano in Ecuador, in the E. chain of the Andes, 34 m. S. S. E. of Quito, in lat. 0° 45′ 11″ S., lon. 78° 42′ W. Its summit, according to Humboldt, is 18,862 ft. above the sea; but Dr. Reiss, who was the first to ascend it, in November, 1872, states that the barometer gave a height of 19,660 ft., while his trigonometrical observations, from different bases, gave to the northern peak an elevation of 19,496, and to the southern peak 19,427 ft. The valley on the western side, which separates this from the next chain, lies itself at an elevation of about 9,000 ft., so that the great altitude of the mountain is lost in that of the group to which it belongs. The waters upon its S. and E. slopes find their way into the river Napo, a tributary of the Amazon; while those on the N.W. side flow N.W. past Quito, and in the river Esmeraldas are discharged into the Pacific in the comparatively short course of about 200 m. Cotopaxi is remarkable as the highest active volcano in the world. It is distinguished also for its symmetrical figure, gradually sloping up from its immense base in the form of a cone, which below the apex is cut off to form a summit, in which is the crater. This, as seen by Reiss, is of an elliptical form, the major axis lying N. and S.; he estimated the depth to be 1,500 ft., and there were no indications of a level bottom. In the sides are many large *fumorolas*, sending forth dense masses of vapor charged with gas, and having a temperature of 156°. Around the edge is seen a circular wall of rock, which, examined by a telescope, appears like an artificial parapet. The steepness of this wall, and the crevices through it, by which the heated vapors of the volcano escape, are supposed to prevent the snow from lying here, as it does below for a vertical descent of about 4,400 ft. Upon this belt none of the irregularities of structure of the mountain are perceived. All lies concealed beneath an unknown depth of snow, which undergoes no apparent change except along its lower margin. Below this succeeds another marked belt, distinguished by its barren aspect, clothed but with small shrubs and lichens; and this gradually gives place to the forest belt, which extends to the base of the mountain. Nowhere are these divisions so conspicuously marked as in the high mountains of this portion of the Andes. The snowy belt of Cotopaxi is an especial object of admiration. Seen through the pure atmosphere in summer evenings, its color changes according as the rays of the setting sun are reflected from its surface; it appears at one time silvery white and dazzling, and again like a mass of burnished gold. The rocky portions present darker shades, often assuming violet and purple tints of wonderful beauty and magnificence. Sometimes, however, the cone appears black, owing to the snow being covered with ashes. Out of its summit arises a column of smoke, and occasionally discharges like those of bombs are heard, accompanied with emissions of fire, visible at night. The flow of lava is of rare occurrence, as in all the South American volcanoes. The first eruption on record occurred in the year 1533. On the S. side of Cotopaxi is a porphyritic peak known as the "Indian's Head," which tradition says was the original summit of the volcano, torn off Aug. 29, 1533, the day on which Atahuallpa was put to death by Pizarro. Dr. Reiss thinks that it forms no part of Cotopaxi, but belongs to a more ancient volcano. In 1698 the town of Tacunga, 8 leagues distant S. S. W., was destroyed by an eruption. In 1743 and 1744 flames were seen issuing through innumerable crevices around the crater, and rising from its summit to great heights in the air. The snow on the evening of June 15 was melted, and torrents of water were poured down the sides of the mountain, devastating the country around. Rocks as large as the huts of the Indians are said to have been thrown as far as 9 or 10 m. from the mountain. La Condamine, who for several years previous had been in the vicinity, and in 1738 had made unsuccessful attempts to scale the peak, was a witness to some of these eruptions. The eruption of April, 1768, is reputed to have been the most terrible of all. Showers of ashes and clouds of smoke



Cotopaxi, viewed from Salto.

sent forth from the crater obscured the light of the sun, producing such darkness that the inhabitants of Tacunga and Hambato were obliged to grope their way with lanterns till 3 P. M. The ashes were carried through the air even to Guayaquil, 130 m. distant, and Popayan. A deluge was produced in 1803. During this eruption Humboldt, who was at Guayaquil, heard day and night the explosions of the volcano, which resembled heavy discharges of artillery. From that time the volcano remained tranquil till 1851, when flames again appeared at its summit, dense clouds of smoke rolled forth from the crater, and small eruptions occurred on its eastern slope. In 1855 a greater eruption took place on the W. side, in which lava and burning stones were ejected, and water was poured down the sides of the mountain. Reiss found this lava stream. It was still warm, having a temperature of from 68° to 90°, that of the surrounding air being 32°. Its greatest width was about 3,000 ft. and the estimated thickness 150 ft. No fissure or accumulation of scoriæ indicated its source; but its point of departure is by his observations 18,700 ft. above the sea. In 1856 occurred another on the E. side.

COTRONE (anc. *Crotona*), a town of S. Italy, in the province and 36 m. N. E. of the city of Catanzaro, on the Ionian sea, at the mouth of the river Esaro; pop. about 6,000. It is a poor town, but is defended by a strong citadel erected by Charles V. The harbor is protected by a tongue of land, on which the town is laid out, and by a mole built of the materials of the temple of Juno, on a promontory 6 m. S. E. It is the seat of a bishop, and contains a cathedral, five churches, and several convents, houses of refuge, and hospitals, including one for soldiers. Licorice root and orange and olive trees are extensively cultivated; the oranges, being sent to Taranto and thence exported, are known in foreign markets under the latter name. The region is rich in cereals and wine. The town is on the railway which skirts the eastern coast of Italy. Steamers connect it with Naples and other ports. Cotrone surrendered to the English after the battle of Maida (1806), and when they withdrew it was besieged and taken by the French under Masséna. (See CROTONA.)

COTTA, a family of Italian origin, settled in Germany since the 15th century. **I. Johann Georg** about 1640 founded an establishment at Tübingen, which at present is one of the leading publishing houses in Germany. **II. Johann Friedrich,** an eminent theological writer, born May 12, 1701, died Dec. 31, 1779. His *Kirchenhistorie des Neuen Testaments* (3 vols., 1768–'73) was highly esteemed. **III. Johann Friedrich,** baron von Cottendorf, grandson of the preceding, born in Stuttgart, April 27, 1764, died Dec. 29, 1832. He studied law and natural philosophy, sojourned for some time in Paris, and settled in 1787 in Tübingen, where he assumed the management of the publishing house of his father. His energy in business, and his superior literary attainments, soon placed him in a prominent position. He became acquainted with Goethe, Schiller, Herder, Fichte, Schelling, Jean Paul, Tieck, Voss, A. W. von Schlegel, Humboldt, and others; and many authors, in whose juvenile effusions Cotta recognized the marks of genius, were introduced by him to the public. In this respect his merits can scarcely be too highly appreciated. He established the *Allgemeine Zeitung* (1798), which to this day remains at the head of the daily press of Germany. He removed to Stuttgart in 1810, and in 1824 opened the *Cotta'sche Verlags-expedition* in Augsburg, as the publication office for the *Allgemeine Zeitung* and several other literary and scientific periodicals. Among them were the *Horen*, a literary magazine, to which Schiller was one of the most active contributors; the *Politische Annalen*, the *Morgenblatt*, the *Flora*, the *Ausland*, and the *Polytechnisches Journal*. He was the first among the landholders in Würtemberg to abolish servitude on his domains (1820). He was also an active promoter of scientific agriculture, and of steam navigation on the lake of Constance and the Rhine (1825–'6), and introduced the first steam press in Germany (1824). **IV. Georg,** son of the preceding, born July 19, 1796, died Feb. 1, 1863. He studied law, was chamberlain to the king of Bavaria and equerry to the king of Würtemberg, and held several public offices. On the death of his father in 1832, he took control of the publishing business, which he largely extended. This business, which is still conducted by the Cotta family, comprises large establishments in Stuttgart, Augsburg, Munich, and Leipsic. **V. Bernhard,** a German geologist, only distantly connected with the family, born at Zillbach, Oct. 24, 1808. From 1827 to 1831 he studied at the mining academy of Freiberg, and afterward at Heidelberg, where he began the study of law, which he soon abandoned for the natural sciences, and in 1842 became professor in the school of mines at Freiberg. His works in the department of geology are numerous, many of them having passed through several editions. Among them are: *Geognostische Wanderungen* (2 parts, 1836–'8); *Anleitung zum Studium der Geognosie und Geologie* (1839); *Briefe über Humboldt's Kosmos* (1848–'51); *Geologische Bilder* (4th ed., 1861); *Gesteinlehre* (2d ed., 1862); *Entwickelungsgesetz der Erde* (1867); and *Geologie der Gegenwart* (3d ed., 1871).

COTTABUS, a social game, anciently a favorite amusement in Sicily and Greece. The simplest mode of playing it was as follows: A metal basin was produced, into which each person endeavored to cast a certain quantity of wine with his goblet from a certain distance, pronouncing as he threw, either aloud or to himself, the name of his mistress. If all the wine thrown fell into the basin, or if that which fell extracted from the metal a pure and clear

sound, then the party concluded that he possessed the affections of his sweetheart. But if the wine missed the basin, or if the portion which chanced to fall into it produced only a dull and leaden sound, opposite auguries were signified. There were other ways of playing it, in which different apparatus was used, and in Sicily houses were built especially for the game.

COTTENHAM, Charles Christopher Pepys, earl of, an English chancellor, born April 29, 1781, died April 29, 1851. He was educated at Cambridge, studied law, was called to the bar in 1804, appointed solicitor general to Queen Adelaide in 1830, and solicitor general to the king in 1833. In July, 1831, he entered parliament through the interest of Earl Fitzwilliam. In 1834 he became master of the rolls, in 1835 a commissioner of the great seal, and in 1836 lord high chancellor of England, which office he held till September, 1841. On Oct. 5, 1845, by the death of his elder brother, Sir William Weller Pepys, the baronetcy conferred on his father in 1801 devolved on him. In August, 1846, he again became lord chancellor, retiring in June, 1850, when he was made an earl. In politics he was a consistent liberal.

COTTEREAU, Jean. See CHOUANS.

COTTIN, Madame Sophie Ristaud, a French novelist, born at Tonneins in 1773, died in Paris, Aug. 25, 1807. In 1790 she married M. Cottin, a wealthy banker of Bordeaux, who died in 1793. The publication of her first novel, *Claire d'Albe* (1798), was said to have been due to her desire of benefiting a needy friend. Her novel *Élisabeth, ou Les exilés de Sibérie* (1806), was her most careful production, and has been more generally translated into foreign languages than any of her other novels. She published her works anonymously until the attention which they attracted forced her to reveal her name. Among her other novels are *Malvina*, *Amélie*, and *Mathilde*. Complete editions of her works appeared in 1817 and 1823.

COTTLE, Joseph, an English publisher and author, born about 1774, died in 1853. He was an early and generous friend of Coleridge and Southey, whose first poems he published while a bookseller at Bristol. He afterward wrote a volume of "Reminiscences" of those authors, poems entitled "Alfred," "The Fall of Cambria," and "Malvern Hills," essays on Socinianism, and other pieces in prose and verse.—His brother, AMOS COTTLE, who died in 1800, translated the Icelandic Edda into English verse, but is best known by Byron's reference to his name in "English Bards and Scotch Reviewers."

COTTON (Ital. *cotone*, and this from the Arabic *koton*), the downy fibrous substance attached to the seeds of the various species of *gossypium*, a genus of plants of the order *malvaceæ*, which also includes the common mallow, of kindred appearance to the cotton-bearing species. De Candolle thus gives its botanical character: Calyx cup-shaped, obtusely 5-toothed, surrounded by a 3-parted involucel, with dentate-incised, cordate leaflets, cohering at the base; stigmas 3 to 5; capsule 3- to 5-celled, many-seeded; seeds surrounded by a tomentose wool. Cultivation has so modified the plant that the number of its species is uncertain, and is variously given by different authorities. Linnæus recognized five species: *G. herbaceum*, *G. arboreum*, *G. hirsutum*, *G. religiosum*, and *G. Barbadense*. De Candolle describes in his *Prodromus* 13 species, and mentions six others. Dr. Royle refers all the varieties to eight species. Swartz thought they might all be referred to one original species. The divisions generally recognized are three, designated by the first three named species of Linnæus, or by the common names, herbaceous, shrub, and tree cotton; and of these the most important is the herbaceous. Some include in it all the varieties cultivated in the United States; but others refer the long-stapled sea island cotton plant to the arborescent division. Adopting the latter arrangement, the herbaceous would include the plants producing upland or short-stapled cotton. These grow to the height of $1\frac{1}{2}$ to 2 ft., and bear dark green leaves, with blue veins, and 5-lobed. The flowers are pale yellow, with five petals having purple spots at the base. A triangular pod succeeds the flower, and contains in three cells the seeds, and the three locks of white down, which burst forth and cover the shell of the pod, when this opens at its maturity. The seeds of the short-staple cotton are green, and in size larger than those of the grape. They are sown every year. The filamentous substance which constitutes cotton appears like a mass of vegetable hairs of varying lengths, rising from the surface of the seeds, enveloping them, and assisting to fill up the cavity of the seed vessel. Under the microscope, the filaments appear to be for the most part ribbon-formed or flattened cylinders, with a thickened list at either end, and veins of embroidery running along the middle. They vary in length from half an inch to $1\frac{3}{4}$ inch, and in breadth from $\frac{1}{700}$ to $\frac{1}{2500}$ of an inch. The cotton fibre is seldom straight like that of flax, but is either twisted or in the shape of a corkscrew. Those of the best sea island very commonly appear to be beautiful spiral springs singularly adapted to the spinning process. The *hirsutum*, hairy or shrub cotton, includes many varieties, which grow wherever the herbaceous is found. In the West Indies it is biennial or triennial; in India and Egypt it lasts from six to ten years; but in more temperate climates it is an annual. It includes the *religiosum* of Surinam, the *Barbadense*, the Peruvian, and other species. The cotton of Guiana and Brazil is said to belong to this division. The plant resembles in size and appearance a currant bush. The fruit or pod differs from that of the herbaceous in being of an oval form and of larger size. The tree cotton grows to the height of 15 to 20 ft. It is found in India, China, Egypt,

the United States, &c. It came to the United States through the Bahama islands from one of the Caribbean isles, and is supposed to have originated in Persia. The fibre is remarkable for its length, strength, silkiness, and yellowish tinge; the seeds are black. In Santo Domingo the cotton plant, instead of being a simple bush planted from the seed each year, is a tree growing two and three years, which needs only to be trimmed and pruned to produce a large yield of the finest cotton. The cotton plant is indigenous to the tropical regions of both hemispheres; but the range of its cultivation extends north to the southern part of Europe and south to the Cape of Good Hope, and in the western hemisphere from Virginia to southern Brazil. The natural demands of the plant are for a tropical or semi-tropical climate that affords seven or eight months entirely free from frosts. Cotton was found by Humboldt in the Andes growing at an elevation of 9,000 ft., and in Mexico at 5,500. Royle states that it is cultivated at a height of 4,000 ft. in the Himalaya.—The seasons best adapted to the growth of cotton are a wet and warm spring, allowing the young plants to become well started and firmly set in the soil; a long hot summer, with bright days and dewy nights, and occasional showers to mature the bolls; and a long dry autumn, giving full time for gathering the crop. It has been ascertained that Indian cotton seed brought to the United States (from where it is a native to where it is an exotic) will produce a better cotton than in India, tending to longer and better staple continually. On the contrary, New Orleans seed planted in India will produce cotton the first year nearly equal to its original, but every year of reproduction from the same seed will exhibit more and more deterioration, until the product shall have assimilated to the native Indian cotton. The conditions of the two countries cause the characteristics of cotton to determine in opposite directions; hence the necessity for frequent renewals of good staple seeds in India. An analysis recently made shows that an ordinary crop of cotton removes each year from an acre of soil a little more than 26½ lbs. of chemical salts, containing a little more than 9 lbs. of potash, nearly 9 lbs. phosphoric acid, a little more than 1 lb. of sulphuric acid, 3½ lbs. of magnesia, and nearly 2 lbs. of lime. From this it appears that the soil must be strengthened by the use of fertilizers rich in phosphates and potash, and having a large amount of sulphuric acid.—The use of the fibre of the cotton plant as a material for textile fabrics does not appear to have been known to those nations of antiquity whose skill in the manufacture of fine linen and in the weaving of wool is recorded in the most ancient writings. The cloths in which the mummies of the Egyptians were enveloped exhibit only the round smooth fibre of flax, never the sharp, angular, and spirally twisted fibre peculiar to cotton, a structure which may be recognized in the rags of the stuff made of the material, and is not lost even in the pulp to which these rags are reduced for the purpose of being made into paper. The earliest notice of cotton is by Herodotus, about 450 B. C., who speaks of the trees of India bearing, as their fruit, fleeces more delicate and beautiful than those of sheep, and of the Indians using them for the manufacture of cloth. Aristobulus and Nearchus, generals of Alexander, brought back to Greece correct accounts of the cotton tree and of its product. Theophrastus also described its culture from exact information. From India, cotton cloth was gradually introduced into Greece and Rome, and before the Christian era it was used by Verres in Sicily as a covering for his tents. According to Livy, Lentulus Spinther (63 B. C.) first introduced cotton awnings in the theatre at the Apollinarian games; and Cæsar afterward covered the forum with them, as also the sacred way from his own house to the Capitoline hill, which appeared more wonderful than the gladiatorial exhibition itself. The cotton fabrics of the Hindoos have been excelled in fineness and excellence only by the productions of the most perfect machines of modern times. By them were made the fine muslins known to the ancient Greeks by the name of Γαγγητικοί, which referred to their coming from the borders of the Ganges. These were both plain and ornamental, and some were white and some beautifully dyed. The city of Calicut on the western coast, which with Surat was an ancient cotton mart for the supply of the more western nations of Asia, gave its name to the variety of the fabric known as calico. As described by Tavernier, some qualities of this were "so fine that you could hardly feel them in your hand, and the thread when spun is scarcely discernible." He also speaks of the cloth making transparent garments, and of turbans containing 25 or 30 ells of it weighing



Shrub Cotton (Gossypium Barbadense).

less than 4 oz. A single pound of thread was spun out to the length of 115 miles; but it has since been made in England so fine that a pound could be made to reach 1,026 miles. The famous muslins of Dacca, made of a staple too short to be spun by Europeans or woven by any machinery, and designated as "webs of woven wind," are produced from cotton grown only in a district of about 40 m. in length by 3 in breadth, lying to the northeast of Calcutta. There are accounts of muslins made in Bengal so fine that a piece requires four months to make it, and is worth 500 rupees; when laid upon the grass and covered with dew, it is not discernible.—Spain was the first of European countries to adopt the cotton culture; it was introduced there as early as the 10th century by the Moors, and was about the same time extended to Sicily. The Venetians engaged in it about the 14th century; and the Turks about the same period introduced it into Roumelia and Macedonia. The earliest notice of cotton as an article of English trade is about the end of the 15th century. In the early part of the 18th century the English received it from the East and West Indies. In 1700 about 1,000,000 lbs. were consumed in Great Britain. The consumption increased to 2,200,000 lbs. in 1720, and 3,900,000 in 1764. After 1786 the increase in the consumption, in consequence of Arkwright's invention, was most extraordinary. In 1800 the amount consumed was about 51,000,000 lbs., which rose to 150,000,000 lbs. in 1820, 588,200,000 in 1850, and 1,101,191,280 in 1870.—In the new world, the manufacture of cotton cloth appears to have been well understood by the Mexicans and Peruvians long before the discovery of their countries by Europeans. Columbus found the cotton plant growing wild in Hispaniola, and later explorers recognized it as far north as the country bordering the Mishe-sepe, or Mississippi, and its tributaries. Cortes, on setting out from Trinidad on the southern coast of Cuba for his Mexican expedition, gathered it in abundance to quilt the jackets of his soldiers as a protection, after the practice of the natives, against the Indian arrows; and when on the Mexican coast, among the rich presents received by him from Montezuma were "curtains, coverlets, and robes of cotton, fine as silk, of rich and various dyes, interwoven with feather work, that rivalled the delicacy of painting." The Mexicans also fabricated white cotton cloths for numerous uses, and even converted the material into a sort of paper. The West India islands furnished to Great Britain about the close of the last century some 40,000 bales, or three fourths of the supply of cotton at that time. The quality was the long staple. Cotton was exported from Brazil as early as 1760, but it was not till about 1825 that Brazilian cotton began to be extensively used in England. In the United States, cotton seeds, as stated in Purchas's "Pilgrims," were first "planted as an experiment in 1621, and their plentiful coming up was, at that early day, a subject of interest in America and England." In the province of Carolina the growth of the cotton plant is noticed in a paper of the date of 1666 preserved in Carroll's "Historical Collections of South Carolina." In 1736 the plant was known in gardens in lat. 39° N., on the eastern shore of Maryland; and about 40 years afterward it was cultivated in the county of Cape May in New Jersey. It was, however, little known except as a garden plant until after the revolutionary war, at the commencement of which Gen. Delagall is said to have had 30 acres of the green-seed cotton under culture near Savannah. In 1748 it is stated that among the exports of Charleston, S. C., were seven bags of cotton wool, valued at £3 11*s.* 5*d.* a bag. Another small shipment was made in 1754; and in 1770 three more, amounting to 10 bales, were made to Liverpool. In 1784 eight bags shipped to England were seized, on the ground that so much cotton could not be produced in the United States. The exports of the next six years were successively 14, 6, 109, 389, 842, and (in 1790) 81 bags. In 1786 the first sea island cotton was raised on the coast of Georgia, and its exportation was commenced in 1788 by Alexander Bissel, of St. Simon's island. The seeds were obtained from the Bahamas, the plant having been introduced there from Anguilla, one of the Leeward isles. The first successful crop in the state was that of William Elliott in 1790, on Hilton Head island. The excellent quality of the staple caused it to be distinguished from other cottons in the year 1805, and enabled it to command much higher prices. In 1806 it sold for 30 cts. per lb., when other cotton was worth 22 cts. In 1816 it brought 47 cts., other cotton 27 cts. The great length of the fibre was unequalled, and the English manufacturers at first actually reduced it by cutting before spinning. The success of the crop caused many to engage in its cultivation, and some of the largest fortunes in South Carolina were thus rapidly accumulated. The extent of the region adapted to it was, however, limited, and the amount raised in 1805 was not exceeded by the crop of 1832, being about 8,000,000 lbs. The culture of the other varieties, the herbaceous and the *hirsutum* or shrub cotton, distinguished by their green instead of the black seed of the sea island, was rapidly extended in the last 10 years of the 18th century throughout the southern states, the product being known as the short staple or upland cotton. In 1791 the cotton crop in the United States was 2,000,000 lbs., of which three fourths was raised in South Carolina and one fourth in Georgia. The exports amounted to 189,500 lbs. In 1801, 48,000,000 lbs. were produced, and 20,000,000 lbs. exported.—Besides the United States, the chief countries for the production of cotton are the East Indies, Egypt, Brazil, the West Indies, and Guiana.

India contributes a supply of cotton next in importance to that of the United States. The earliest recorded importation of raw cotton from India to England was in 1783, when the amount imported was 114,133 lbs. Formerly the exports were principally from the districts within 40 m. of the coast; but the recent construction of railroads renders practicable the exportation of cotton raised in the interior. Although great pains have been taken to improve the culture, and seed from other countries and methods in use in the United States have been introduced at great expense, the product has not been made to equal in quality the long staple obtained in America, and, from some peculiarity common to all of it under whatever condition it is raised, is never likely to be substituted to a great extent for American cotton. The extent of the Indian cotton crop can only be reached by estimates, as the exports to Europe form a small proportion of the whole production. The home consumption is enormous, cotton being extensively used instead of wool, linen, &c., for nearly every article of clothing, and even for woven or padded furniture. The exports to China are large. In 1858 Dr. Forbes Watson estimated the whole production at 2,432,395,875 lbs., equal to 6,500,000 bales of 375 lbs. each. The amount consumed in India was placed at 5,760,000, and that exported at 740,000 bales. After much discussion these estimates were accepted with general favor. It has since been estimated that not less than 24,000,000 acres are devoted to its culture, and that the annual production amounts to nearly 3,000,000,000 lbs. For the four years ending with 1872, the average annual imports of Indian cotton into Europe amounted to 1,650,000 bales, or 594,000,000 lbs. In 1872 the quantity reached 2,098,000 bales. Though the Chinese consume immense quantities of cotton, its use and cultivation do not appear to have been known to them previous to the 11th century, and their own crop still falls far short of supplying their wants. The best known of their fabrics are the nankeens, named from the city of Nankin. Ceylon, Borneo, and other islands of the Indian archipelago, have long produced cotton, and are susceptible of a largely increased culture of it. Japan produces it, but the fibre is found to be too coarse for the manufacture of fine fabrics. A portion of Australia is well adapted for the growth of the plant; but no country either of the old or new world is probably to be compared with Africa for the adaptation of its soil and climate to this cultivation. In the central portions of the continent the product has been employed from remote periods; and it has long been known upon the coast of Guinea, in Abyssinia, and upon the banks of the Senegal, Gambia, Niger, &c. Cotton is also produced along the coast of eastern Africa, and in the vicinity of the Cape of Good Hope; but much of the African cotton is too coarse and short for the manufacture of the finer fabrics. The principal cotton-producing district of Africa is Egypt, where its culture was introduced in 1821. A small quantity is consumed in the country; but the greater portion is exported, chiefly to Europe. The consumption of Egyptian cotton in Europe has averaged about 300,000 bales annually for ten years. The best Egyptian cotton ranks next to the sea island in quality and length of staple, though it is not usually so well cleaned. The extended culture of cotton in Brazil, which was begun early in the present century, has increased so rapidly that for many years that country ranked next to the United States in the amount produced. In many places on the coast the climate was found adapted to the growth of the long-staple cotton; but the most extensive plantations are now in the interior. The principal cotton-growing province is Pernambuco. The European consumption of Brazilian cotton has increased from 122,000 bales in 1862 to 866,000 in 1872. In 1873 it amounted to 653,000. In the British West Indies and Guiana, and in Turkey and other countries bordering on the Mediterranean, the production of cotton is attended with profit. Australia, the South Pacific islands, South Africa, and the west coast of South America have produced fine specimens of long-stapled (black-seed) cotton, vying in spinning value with the best staples from Egypt, Surinam, Pernambuco, &c.; while eastern Europe and western Asia have produced good specimens of green-seed cotton from New Orleans seed. But these countries will not rank high in cotton production, because other staples can be cultivated with greater profit.—The United States exceed all other countries in the production of cotton, both as to quantity and quality. This is attributed not so much to soil as to climate. The plant is found growing as far north as 40°; but the belt within which its cultivation is attended with profit lies between the gulf of Mexico and the parallel of 36°, and the best cotton region extends about 100 m. on either side of the parallel of 32°. Although it may be profitably cultivated in some of the Tennessee valleys, in some bottom lands of northern Arkansas and southern Missouri, and a limited area in North Carolina, the cotton states, properly speaking, are South Carolina, Georgia, the northern part of Florida, Alabama, Mississippi, the northern half of Louisiana, the southern half of Arkansas, and the eastern half of Texas. The yield of cotton per acre varies greatly, corresponding with the condition of the soil; it ranges in amount from 130 lbs. on the uplands to 400 lbs. on the rich lowlands. The productive capacity of the soil is greatly increased by the use of fertilizers. The average for the total crop of the United States in 1872 was one half bale per acre. There are two leading varieties of cotton cultivated in the United States, the upland from green and the sea island from black seed. The upland, known also as the short-

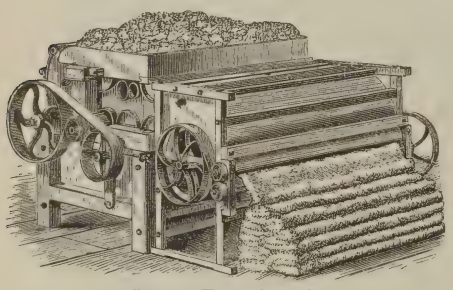
staple, is of Mexican or West Indian origin, and has received the designation upland to distinguish it from the produce of the islands and low districts near the shore. It constitutes the great bulk of the crop in the United States. Thus in 1873, when the total production of cotton amounted to 3,930,508 bales, the crop of sea island was 26,289 bales. The sea island (*G. arboreum* or tree cotton) is the finest and best kind of cotton produced anywhere, and commands the highest price. It will not flourish at a distance from the sea, and its cultivation is limited to districts along the shores of South Carolina, Georgia, Florida, and Texas. The most favorable point for its production, in respect both to soil and climate, is Edisto island, on the coast of South Carolina, south of Charleston. The soil is light and sandy, but a little above tide, and its fertility is increased by the use, as manure, of mud from the surrounding salt marshes. The average yield per acre is little more than half of that of the upland. The staple or filament of sea island cotton is long, silken, and delicate, which renders it highly valuable in the production of the finest yarns. It is never introduced into the coarser muslins, but is used for the most delicate fabrics, and very largely in the manufacture of the finest quality of cotton thread; and it is also consumed in large quantities by silk manufacturers, the fine, soft, and glossy fibre rendering a mixture with the thread of the silkworm difficult to be detected.—The cotton plant is cultivated in the southern states from the seed, which is sown generally in March and April, in rows commonly 4 to 5 ft. apart, and in drills 18 inches apart. Machines have been invented and used for planting the seeds, but not with full success; accordingly the planting is generally done by hand. The soil is preferred light, even if sandy, and is kept well weeded by occasional hoeing or running



The Gin House.

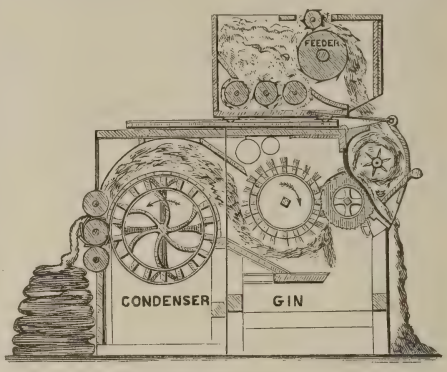
a light plough or scraper between the rows. Sea island cotton is generally planted between March 20 and April 10, upon high beds, 5 ft. apart one way, and from 8 to 24 inches the other, according to the richness of the soil. In ten days or a fortnight after planting, rows of tiny leaflets appear bursting out of the moist earth, and early in June the plant begins to bloom. It is said that no crop in the United States presents an appearance so beautiful as growing cotton, especially at the gathering season, when the globes of snowy wool are seen among the glossy dark green leaves; and the beauty of the plantation is still greater in the hotter countries, where the yellow blossom or flower and the ripened bolls are seen at the same time. In June the cotton fields present the appearance of vast flower gardens. The blossom resembles that of the hollyhock, and has the peculiarity of changing color from day to day. A flower, opening in the morning of a pale straw color, by noon will be pure white, in the afternoon faint pink, and the next morning clear pink. The blossom of the sea island, however, is always pale yellow. The height of the plant varies, according to soil and climate, from 2 to 6 ft. As the flowers fall off, the "forms" or young bolls begin to grow rapidly. At first they are somewhat angular in shape, but afterward assume a nearly spherical form. The cotton plant is often injured, and sometimes destroyed, by small animals or insects which attack the plant when very young. (See Cotton Worm.) Early in August the picking season begins, and continues until November, and sometimes even until the latter part of December, as the plant continues to produce and ripen its bolls of cotton until the

appearance of frost. The height of the picking season is in October. The picking is by hand. Lines of pickers, generally negroes, male and female, with wide-mouthed sacks suspended from their shoulders or waists, pass between the rows of plants, and gather the fleecy cotton from the open pods, which is carried in sacks and deposited in baskets at the ends of the rows. Each person will pick an average of from 200 to 300 lbs. per day. Successive pickings are made as the bolls ripen. The cotton is brought from the field in wagons to the gin house, generally a plain wooden structure two stories high. If damp it is dried in the sun. The next step is the process of ginning, or the separation of the fibre from the seed. This process was at first performed by hand, which was a very tedious operation owing to the tenacity with which the cotton clings to the seed; but since the great invention of the cotton gin by Eli Whitney, in 1793, it has been done by that machine with the most beneficial results. So great was the effect of this invention upon the cultivation and manufacture of cotton, that its production and consumption increased with marvellous rapidity. The principle and mechanism of the cotton gin are both simple. The main features consist of



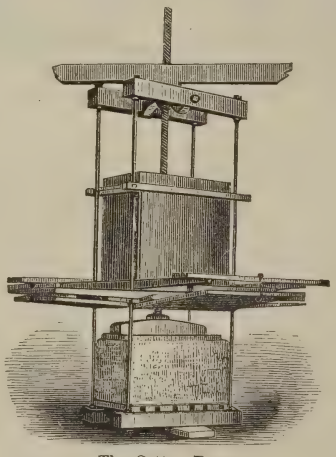
Exterior View of the Gin.

a cylinder, generally about 4 ft. long and 5 in. in diameter, upon which is set a series of circular saws, about half an inch apart, and projecting about two inches above the surface of the revolving cylinder. A mass of cotton in the seed, separated from the cylinder by steel bars or grating, is brought into contact with the numerous teeth on the cylinder. These teeth catch the cotton while playing between the bars, which allow the lint but not the seed to pass. Underneath the saws is a set of stiff brushes on another cylinder revolving in the opposite direction, which brush off from the saw teeth the lint which they have just pulled from the seed. The remaining feature is a revolving fan for producing a current of air to throw the light and downy lint thus liberated to a convenient distance from the revolving saws and brushes. These are the essential principles of the cotton gin as invented by Whitney, and as still used; but in various details and workmanship, it has been the subject of many improvements, the object of which is to pick the cotton more perfectly from the seed, to prevent the teeth from cutting the staple, and to give greater regularity to the operations of the machine. The ordi-



Longitudinal Section of the Gin.

nary gin, however, cannot be successfully used in separating the lint of sea island cotton from the seed. The machinery generally used for this purpose consists of two fluted rollers, commonly made of wood, but sometimes of vulcanized rubber or steel, about $\frac{5}{8}$ in. in diameter and from 9 to 16 in. long, placed parallel in a frame which keeps them almost in contact. These rollers, revolving in opposite directions, draw the cotton between them, while the seeds are prevented from passing by the want of sufficient space. This machine is worked by the foot of the operator acting upon a treadle, while the cotton is fed between the rollers by hand. From 30 to 40 lbs. a day can be cleaned by one of these machines, while the average daily capacity of an ordinary Whitney



The Cotton Press.

gin is about 3,200 lbs. Horse power is commonly used in ginning cotton; but on large plantations steam is used. The next process is that of packing the cotton into bales. This is

done by means of presses, which are generally worked by hand, but sometimes by horse power. Where, however, large quantities are packed, hydraulic presses are used. Screw presses are also common. There is no uniformity in the size of bales, but the average American bale weighs from 450 to 460 lbs. The cotton seed is of an oily nature, yielding a vegetable drying oil. It is extensively used on cotton fields as a fertilizer, for which purpose it has valuable qualities. Recently efforts have been made to make this oil a leading article of trade. The oil was extracted from the seed by means of machinery, and for a while was used in the manufacture of soap, as a substitute for olive oil, as a lubricator, for illuminating purposes, and as a substitute for linseed oil in mixing paints. It did not prove, however, to be well adapted to these purposes, and has not come into general use. The amount of cotton-seed oil exported from the United States in 1872 was 547,165 gallons, valued at $293,546. After the seed has been ground and the oil extracted therefrom, the refuse is formed into "cotton-seed cake," which has been found to be a very useful article of food for cattle as a substitute for linseed oil cake. Cotton-seed cake is also exported in large quantities to Great Britain, where it is used in feeding cattle.—The crop having been packed into bales, the transportation to the various markets of the world is begun. A portion of each crop is consumed at the south, the extent of which is indicated by the fact that of the total consumption of the United States in 1872–'3, amounting to 1,201,127 bales, about 137,662 bales were consumed by southern and 1,063,465 by northern mills. The greater proportion of the crop not retained in the south finds an outlet at the leading southern ports, whence it is shipped to northern and to foreign ports. The principal cotton ports of the south, with the relative extent of the commerce at each, are indicated in the following statement of exports for 1872–'3:

SHIPPING PORTS.	To foreign ports, bales.	To coastwise ports, bales.
Charleston, S. C.	160,169	225,016
Fernandina, St. Mark's, &c., Fla.	.....	14,068
Galveston, Tex.	210,488	133,304
Mobile, Ala.	132,130	197,131
New Orleans.	1,177,058	228,968
North Carolina ports.	1,632	59,898
Savannah, Ga.	375,895	248,752
Virginia ports.	7,722	424,791

There is also a considerable interior movement of cotton to northern mills and markets, amounting in 1873 to 402,296 bales. This transportation is chiefly by water to points on the Mississippi and Ohio rivers, Cairo, St. Louis, Cincinnati, &c., whence it is transported north and east by railroad. In commerce cotton is distinguished by its color, but more especially by the length, strength, and fineness of its fibre. White usually indicates a superior quality; a yellow or a yellowish tinge, when not the effect of accidental wetting or inclement seasons, is considered as indicating greater fineness. It is desirable that cotton shall have a slight and delicate creamy tint, indicating well matured and strong staple; but otherwise the purer white the better. The commercial classification of cotton is determined—1, by cleanliness or freedom from impurities, such as dry leaf, sand, &c.; 2, by absence of color; both subject also to character of staple length, and strength and fineness of fibre. These together determine relative value. There are two general classifications, long-stapled and short-stapled. Of the former the best is the sea island cotton of the United States; but its quality differs so much that there is a wide range in its prices. The superior samples of the cotton of Brazil are also classed with the long-stapled. The cotton of the United States, with the exception of sea island, and also that of India, belong to the short-stapled variety. The relative value of the various kinds of cotton is indicated in the following quotation of prices in the Liverpool market:

Long-staple or black-seed variet'e.		Green-seed varieties.	
Sea island, middling...	23*d.*	New Orleans, middling.	11*d.*
Egyptian, fair.....	11½*d.*	Mobile, middling.....	10⅞*d.*
Peruvian, fair.....	11½*d.*	Upland, middling.....	10⅞*d.*
Pernambuco, fair.....	11½*d.*	Smyrna, &c., fair.....	9½*d.*
West Indian, fair.....	11*d.*	Surats, Dharwars, fair..	9⅜*d.*
		Surats, Dhollerahs, fair.	8⅝*d.*
		Madras, fair.....	8⅜*d.*
		Bengal, fair.....	7½*d.*

Probably no other staple has attained a commercial importance equal to that of cotton. Certainly no other article enters so largely into the aggregate value of the commerce of the United States and that of Great Britain. The total value of the domestic exports of the United States for the year ending June 30, 1872, as reported by the chief of the bureau of statistics, was $549,219,718, while the exports of cotton amounted to $180,684,595; and so of the total value of imports into Great Britain in 1872, amounting to £354,693,624, the value of cotton imported reached £53,380,670, being more than double that of any other article; of this amount over one half was imported from the United States. In the United States the increase in the production of cotton was steady and rapid until the civil war. Beginning with 1830, the increase amounted to about 1,000,000 bales in each decade till 1859–'60, when the production reached the amount of 4,861,292 bales, which is the largest crop ever produced in the United States, although that of 1870–'71 fell short of it less than 500,000 bales. There is no record of the amount produced during the war, 1861–'5, which was necessarily very small. Since its close the production has increased from 2,269,316 bales in 1865–'6 to 4,362,317 bales in 1870–'71. There was a marked decrease in the production of 1871–'2, the crop amounting to 3,014,351 bales; but this is attributed to causes which will not permanently retard the general increase of the production. The increase in the home consumption has been still

more remarkable. Beginning with 126,512 bales in 1830, the consumption amounted to 295,193 in 1840, 613,498 in 1850, 978,043 in 1860, and 1,201,127 in 1873. According to the United States census, 288,558,000 lbs. of cotton were consumed in American mills in 1850, 422,704,975 in 1860, and 398,308,257 in 1870. The statistics of the production and consumption of cotton in the United States and the exports therefrom are by no means uniform. They are generally prepared under the auspices of commercial organizations, or by journals devoted to commerce, from a careful comparison of the exports, receipts, and stock on hand at the various ports where the staple finds an outlet, and estimates of the amount consumed in the interior. The results, therefore, will naturally vary for the same periods, and can be only approximately correct. There is also a lack of uniformity in the weight of bales, which renders it impossible to fix an accurate average for an extended period. The following table is believed to possess as high a degree of accuracy as can be attained:

UNITED STATES COTTON TRADE FOR 48 YEARS.

YEARS, ending Aug. 31.	Production, bales.	Consumption, bales.	Exports, bales.	Average net weight per bale, lbs.	Average price per lb. in New York, cents.	Average price per lb. in Liverpool, pence.
1825–'26	720,027	.....	.....	.....	12·19	5·85
1826–'27	957,281	149,516	854,000	331	9·29	5·79
1827–'28	720,593	120,593	600,000	335	10·32	5·84
1828–'29	870,415	118,853	740,000	341	9·88	5·32
1829–'30	976,845	126,512	839,000	339	10·04	6·44
1830–'31	1,038,847	182,142	773,000	341	9·71	5·72
1831–'32	987,477	173,800	892,000	360	9·38	6·22
1832–'33	1,070,438	194,412	867,000	350	12·32	7·87
1833–'34	1,205,394	196,413	1,028,000	363	12·90	8·10
1834–'35	1,254,328	216,888	1,023,500	367	17·45	9·13
1835–'36	1,360,725	236,733	1,116,000	373	16·50	8·79
1836–'37	1,423,930	222,540	1,169,000	379	13·25	6·09
1837–'38	1,801,497	246,063	1,575,000	379	10·14	6·28
1838–'39	1,360,532	276,018	1,074,000	384	13·36	7·19
1839–'40	2,177,835	295,193	1,876,000	388	8·92	5·42
1840–'41	1,634,954	267,850	1,313,500	394	9·50	5·73
1841–'42	1,683,574	267,850	1,465,500	397	7·85	4·86
1842–'43	2,378,875	325,129	2,010,000	409	7·25	4·37
1843–'44	2,030,409	346,750	1,629,500	412	7·73	4·71
1844–'45	2,394,503	389,000	2,083,700	415	5·63	3·92
1845–'46	2,100,537	422,600	1,666,700	411	7·87	4·80
1846–'47	1,778,651	428,000	1,241,200	431	11·21	6·03
1847–'48	2,439,786	616,044	1,858,000	417	8·03	3·93
1848–'49	2,866,938	642,485	2,228,000	436	7·55	4·09
1849–'50	2,233,718	613,498	1,590,200	429	12·34	7·10
1850–'51	2,454,442	485,614	1,988,710	416	12·14	5·51
1851–'52	3,126,310	689,603	2,443,646	428	9·50	5·05
1852–'53	3,416,214	803,725	2,528,400	428	11·02	5·54
1853–'54	3,074,979	737,236	2,319,148	430	10·97	5·31
1854–'55	2,982,634	706,417	2,244,209	434	10·39	5·60
1855–'56	3,665,557	770,739	2,954,606	420	10·30	6·22
1856–'57	3,093,737	819,936	2,252,657	444	13·51	7·73
1857–'58	3,257,339	595,562	2,590,455	442	12·23	6·91
1858–'59	4,018,914	927,651	3,021,403	447	12·08	6·68
1859–'60	4,861,292	978,043	3,774,173	461	11·00	5·97
1860–'61	3,849,469	843,740	3,127,568	477	13·01	8·50
1861–'62	.....	.....	.....	...	31·29	18·37
1862–'63	.....	.....	.....	...	67·21	22·46
1863–'64	.....	.....	.....	...	101·50	27·17
1864–'65	.....	.....	.....	...	83·38	19·11
1865–'66	2,269,316	666,100	1,554,664	441	43·20	15·30
1866–'67	2,097,254	770,030	1,557,054	444	31·59	10·98
1867–'68	2,519,554	906,636	1,655,816	445	24·85	10·52
1868–'69	2,366,467	926,374	1,465,880	444	29·01	12·12
1869–'70	3,122,551	865,160	2,206,480	440	23·98	9·89
1870–'71	4,362,317	1,110,196	3,166,742	442	16·95	8·55
1871–'72	3,014,351	1,237,330	1,957,314	443	20·48	10·78
1872–'73	3,930,508	1,201,127	2,679,986	464	18·15	9·65

This table was compiled by B. F. Nourse of Boston, a high authority on matters pertaining to the production and manufacture of cotton, and has been extended from the table presented by him in the report on cotton as United States commissioner to the Paris exposition of 1867. The prices are for middling upland. It includes the production of sea island cotton, which during recent years has been as follows:

Years.	Bales.	Years.	Bales.
1856–'57	45,314	1867–'68	21,275
1857–'58	40,566	1868–'69	18,682
1858–'59	47,592	1869–'70	26,507
1859–'60	46,649	1870–'71	21,609
1860–'66	no record.	1871–'72	16,845
1866–'67	32,228	1872–'73	26,289

Of the total crop of this staple in 1873, 13,156 bales were produced in South Carolina, 10,764 in Florida, 1,269 in Georgia, and 1,100 in Texas. Prior to 1825 no full and trustworthy statistics of the production and exports of cotton were collected; but the following statement exhibits the general growth of this industry during the first quarter of the century:

YEARS.	Crop, lbs.	Export, lbs.	Value of exports.	Av. price per lb., cents.
1801–'05	298,000,000	166,000,000	$39,000,000	19·0 @ 23·0
1806–'10	402,000,000	261,000,000	47,000,000	14·0 @ 22·0
1811–'15	400,000,000	210,000,000	33,000,000	10·6 @ 16·5
1816–'20	706,000,000	483,000,000	120,000,000	17·4 @ 33·8
1821–'25	1,045,000,000	762,181,380	128,421,812	11·8 @ 20·9

The points from which the exports of cotton to foreign ports have been made are indicated in the following statement, the years ending Aug. 31:

FROM	1870.	1871.	1872.	1873.
	Bales.	Bales.	Bales.	Bales.
New Orleans	1,005,530	1,302,535	888,976	1,177,058
Mobile	200,838	287,074	137,977	132,130
South Carolina	97,109	175,650	111,388	160,169
Georgia	265,631	464,369	295,798	375,895
Texas	152,559	221,242	116,597	210,438
Florida	.....	.....	.....	.....
North Carolina	50	70	.....	1,632
Virginia	9,660	5,417	3,807	7,722
New York	413,701	667,958	373,071	573,498
Boston	1,677	3,005	13,128	11,128
Philadelphia	.....	1,380	2,108	6,792
Baltimore	32,162	37,567	14,311	20,943
Portland, Me	.....	475	143	2,257
San Francisco	.....	.....	12	324
Total U. S	2,178,917	3,166,742	1,957,314	2,679,986

The exports for the year 1872–'3 were shipped to the following ports:

PORTS.	Bales.	PORTS.	Bales.
Liverpool	1,842,117	Barcelona	52,194
London	336	Santander	1,280
Glasgow	701	Malaga	7,758
Queenst'wn.Cork,&c.	50,487	San Sebastian, &c.	2,543
Cowes, Falmouth, &c.	11,455	Genoa	36,470
Havre	251,172	Trieste	2,947
Rouen	1,731	Salerno	844
Amsterdam	32,404	Narva	5,903
Bremen	191,586	Cronstadt	56,227
Hamburg	24,691	Revel	51,426
Antwerp	25,387	Helsingfors	1,060
Rotterdam	15,706	Mexico	997
Gottenburg and Stockholm	10,136	Other ports	783
Uddevalla	1,650	Total	2,679,986

—In the consumption of cotton Great Britain ranks far above all the other countries of the world, the United States and France following next in order. Here the greater portion of the crop of each country finds a market, and a demand to supply a far greater number of mills and spindles than can be found in any other nation. England therefore may be regarded as the centre of the cotton trade and the greatest cotton market of the world. The increase of the cotton manufacture of Great Britain, and of the consequent demand for the raw material, has been extraordinary. The total amount of cotton annually imported into the country during the five years ending with 1705 amounted only to 1,170,881 lbs.; nor does the amount seem to have increased considerably between that date and 1770. But the wonderful improvements in the methods of spinning made about this time by Hargreaves and Arkwright, and the subsequent invention of the "mule jenny" by Crompton, and of the power loom by Cartwright, produced a revolution in the manufacture of cotton. The growth of the English cotton trade from its origin is exhibited in the following tables. From 1781 to 1815 the statements of imports and exports are given, the difference showing the amount of consumption; from 1820 to 1857 the amount of imports and consumption, the difference showing the exports; from 1858 to 1872, there is also a statement of the countries from which the cotton was imported.

YEARS.	Imports, lbs.	Exports, lbs.
1700 to 1705 (average)	1,170,881	.....
1710	715,018	.....
1720	1,972,805	.....
1730	1,515,472	.....
1741	1,645,031	.....
1751	2,976,610	.....
1764	3,870,392	.....
1771 to 1775 (average)	4,674,589	.....
1776 to 1785 "	6,766,613	.....
1781	5,198,778	98,788
1790	31,447,605	844,154
1795	26,401,340	1,193,737
1800	56,010,732	4,416,610
1805	59,682,406	804,243
1810	132,488,935	8,787,109
1815	99,306,343	6,780,392

YEARS.	Imports, lbs.	Consumpt'n, lbs.	YEARS.	Imports, lbs.	Consumpt'n, lbs.
1820	151,672,655	152,829,633	1839	389,396,559	352,000,277
1821	152,536,620	137,401,549	1840	592,488,010	528,142,743
1822	142,837,628	143,428,127	1841	487,992,355	437,093,631
1823	191,402,508	186,311,070	1842	528,500,000	435,100,000
1824	149,380,122	141,038,743	1843	633,193,116	517,800,000
1825	228,005,291	202,546,869	1844	646,111,304	544,000,000
1826	177,607,401	162,889,012	1845	721,979,963	606,600,000
1827	272,448,909	249,804,396	1846	467,856,274	614,300,000
1828	227,760,642	208,987,744	1847	474,707,615	441,400,000
1829	222,767,411	204,097,037	1848	713,020,161	576,600,000
1830	963,961,452	269,616,640	1849	755,469,012	629,900,000
1831	288,674,853	273,249,653	1850	663,576,861	588,200,000
1832	286,832,525	259,421,463	1851	757,379,749	658,900,000
1833	303,656,837	293,682,976	1852	929,782,448	739,600,000
1834	326,875,425	302,935,657	1853	895,278,749	760,900,000
1835	363,702,963	326,407,692	1854	887,335,904	776,100,000
1836	406,959,057	363,684,232	1855	891,751,952	839,100,000
1837	407,286,783	363,445,035	1856	1,023,886,304	891,400,000
1838	507,850,577	455,036,755	1857	909,318,869	786,000,000

QUANTITIES OF RAW COTTON IMPORTED INTO THE UNITED KINGDOM FROM VARIOUS COUNTRIES, TOTAL EXPORTED, AND EXCESS OF IMPORTS.

YEARS.	United States.	Mexico.	British West India Islands and British Guiana.	Colombia and Venezuela.	Brazil	The Mediterranean, exclusive of Egypt.	Egypt.	British Possessions in the East Indies.	China.	Other countries.	Total imported.	Total exported.	Excess of imports.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1858	833,237,776	.....	867,808	74,144	18,617,872	15,792	88,232,320	132,792,576	.....	11,073,888	1,034,842,176	149,600,600	884,732,576
1859	961,707,264	.....	592,256	6,496	22,478,960	499,040	87,667,056	192,880,880	.....	10,761,120	1,225,989,072	175,143,136	1,050,845,936
1860	1,115,890,608	.....	1,050,784	225,120	17,246,864	82,544	43,954,064	204,141,168	3,920	8,303,680	1,390,895,752	250,339,040	1,140,599,712
1861	819,500,528	.....	486,304	154,896	17,290,336	587,104	40,892,096	360,040,448	.....	9,093,024	1,256,984,736	298,287,920	958,696,816
1862	13,524,224	8,131,520	5,563,376	1,170,736	23,339,008	6,295,856	59,012,464	392,654,528	1,766,016	17,5-5,344	528,973,296	214,714,528	309,258,768
1863	6,304,080	12,278,112	25,181,856	2,623,600	22,603,108	13,806,576	93,552,368	434,420,784	30,586,336	20,655,824	670,084,128	241,352,496	428,731,632
1864	14,198,688	25,539,024	26,733,992	6,500,368	38,017,504	21,755,216	125,473,648	566,527,392	86,157,008	33,770,240	894,102,384	244,702,304	649,400,080
1865	185,382,480	36,664,880	16,586,912	14,699,328	55,403,152	27,239,072	176,838,144	445,947,600	35,855,792	30,501,744	978,502,000	302,908,928	675,598,072
1866	520,061,136	852,240	8,600,352	11,599,392	68,524,400	11,510,688	118,260,800	615,302,240	5,837,440	22,410,376	1,377,514,096	388,981,936	988,532,160
1867	528,166,800	2,464	4,510,288	9,713,872	70,430,080	6,780,480	120,285,264	498,311,008	527,184	17,852,464	1,260,785,904	350,685,936	912,249,968
1868	574,418,016	.....	2,725,856	4,808,160	98,796,768	6,702,304	129,152,928	496,766,640	.....	18,839,440	1,332,761,616	322,718,928	1,000,048,288
1869	457,358,944	40,544	1,695,568	8,085,728	79,417,968	13,506,640	160,450,280	481,440,176	448	19,574,496	1,221,571,232	274,289,344	947,281,888
1870	716,248,848	2,016	2,814,256	4,767,056	64,234,688	11,510,912	143,710,488	341,536,608	10,528	35,091,760	1,339,367,120	298,175,840	1,101,191,280
1871	1,038,677,920	.....	2,671,536	6,582,240	86,158,800	3,777,424	176,166,480	431,209,744	102,144	82,793,488	1,778,189,776	362,075,616	1,416,064,160
1872	625,600,080	31,136	1,450,960	7,960,624	112,500,824	8,081,744	177,581,712	443,234,736	252,112	82,184,544	1,408,637,472	273,005,040	1,135,632,432

Besides the quantities given above, a small supply was received from Japan during 1862–'8, amounting in 1864 to 9,404,304 lbs., and in 1865 to 2,982,896 lbs. The following table, compiled with great exactness by M. Ott-Trümpler, the eminent statistician of Zürich, shows the consumption of cotton in thousands of bales in Europe, and the sources of supply:

YEARS, ending Sept. 30.	ENGLISH CONSUMPTION.						CONSUMPTION OF THE CONTINENT.						Consumption of Europe.
	American.	Indian.	Brazil.	Egypt.	Sundry.	Total.	American.	Indian.	Brazil.	Egypt.	Sundry.	Total.	
1872–'73...	1,654	737	509	306	129	3,335	669	795	144	87	189	1,884	5,219
1871–'72...	1,412	658	668	239	155	3,132	501	703	198	49	190	1,641	4,773
1870–'71...	1,925	558	379	241	119	3,222	919	733	140	96	158	2,046	5,268
1869–'70...	1,304	834	361	168	93	2,760	608	623	165	58	173	1,627	4,387
1868–'69...	877	913	493	175	129	2,587	545	850	191	61	269	1,916	4,503
1867–'68...	1,497	799	533	182	111	2,822	538	723	175	69	277	1,782	4,604
1866–'67...	1,016	815	298	160	125	2,414	532	777	152	55	217	1,733	4,147
1865–'66...	846	878	259	286	150	2,319	391	755	164	69	237	1,616	3,935
1864–'65...	187	850	203	285	348	1,873	49	637	121	89	286	1,182	3,055
1863–'64...	178	620	134	219	414	1,565	64	543	74	106	246	1,033	2,598
1862–'63...	99	905	111	163	54	1,332	34	559	49	64	108	814	2,146
1861–'62...	304	675	101	122	15	1,217	258	415	21	42	40	776	1,993
1860–'61...	2,170	249	...	193	...	2,612	1,273	425	...	78	...	1,776	4,388

The receipts at the ports of Spain, Sweden, and Russia, and the consumption in Italy of native cotton, are not included in the above tables. "The consumption of Russia, Sweden, and Spain," says M. Ott-Trümpler, "is estimated at 8,000 bales per week, or 416,000 bales for the year, and I find that these countries have received very nearly one half from England, and from ports on the continent, comprised in my table, and the remaining half direct from the places of production, this remainder not being included in my statement. To determine, therefore, the consumption of all Europe, there should be added to my estimate of consumption 208,000 bales." According to the Liverpool Cotton Brokers' Circular, the imports into Great Britain and consumption for the year ending Dec. 31, 1872, were as follows:

	Bales.	Average weight, lbs.	Consumption, bales.
American	1,403,470	439	1,436,870
Brazil	717,230	150	713,300
Egyptian	287,730	529	279,290
Turkey, &c.	17,150	385	15,090
West India, &c.	166,440	204	131,650
Surat	778,200	390	689,420
Madras	239,870	300	
Bengal	270,050	300	
Total	3,880,140	354	3,265,620

Of the total imports for 1872, 3,416,310 bales were received in Liverpool. (See COTTON MANUFACTURE.)

COTTON, Charles, an English poet, born at Beresford hall, Staffordshire, in 1630, died at Westminster in 1687. He was educated at Cambridge, travelled on the continent, and inherited in 1658 his father's estate near the river Dove, famous for its beauty and its trout, where he passed a studious and careless life, delighting his friends by his humor and accomplishments. He built a fishing house on the banks of the Dove, in which he entertained for years his friend Izaak Walton. He translated several works from the French and Italian, among which were Montaigne's "Essays" and Corneille's tragedy of "Horace." In 1664 and 1672 he published "Scarronides, or Virgile Travestie," an indelicate burlesque of the first and fourth books of the Æneid. He also burlesqued several of the dialogues of Lucan in poetical translations, and wrote a serious poem entitled "The Wonders of the Peake" (1681), a humorous piece entitled "A Journey to Ireland," and some occasional poems of great merit. He is now best known by the second part which he added to the fifth edition of Walton's "Complete Angler," valuable for the technical information which it gives concerning fly fishing, and for its descriptions of the scenery of the Dove.

COTTON, John, one of the first ministers of Boston, Mass., born in Derby, Eng., Dec. 4, 1585, died in Boston, Dec. 23, 1652. In 1598 he entered Trinity college, Cambridge, and was afterward fellow of Emmanuel and employed as lecturer and tutor. About 1612 he became vicar of St. Botolph's church in Boston, Lincolnshire, where he remained 20 years, noted as a preacher and controversialist, and inclining in his doctrines and practices toward the Puritan worship. His influence with his people carried them mostly with him, but he was at length informed against for not kneeling at the sacrament, and cited to appear before Archbishop Laud in the high commission court. Upon this he sought safety in flight, and after sojourning for some time in London went to America, arriving in Boston Sept. 4, 1633. In October he was ordained on a day of fasting, by imposition of hands by the minister and two elders, teacher of the church in Boston and colleague with Mr. Wilson the pastor. In this connection he remained until his death, with such influence and standing that he has been called the patriarch of New England. His death was brought on by exposure in crossing the ferry to Cambridge, where he was going to preach. He was a critic in Greek, wrote Latin with elegance, and could discourse in Hebrew, and spent 12 hours a day in reading, his favorite author being Calvin. His pulpit eloquence was famous for its simplicity and

plainness, and his discourses were exceedingly effectual in exciting attention to religion. He was very regular in religious observances, keeping the Sabbath holy from evening to evening, and it was from him that the form of that observance was disseminated throughout New England. Among his numerous works the most important are those published in the course of his controversy with Roger Williams, "Milk for Babes," a religious book for children, and "The Power of the Keys," on the nature of church government. Against Williams he defended the interference of the civil power in religious matters for the support of the truth, maintaining the duty, for the good of the church and of the people, of putting away those who, after repeated admonitions, persist in rejecting fundamental points of doctrine or worship.—A monumental tablet, with a Latin inscription by Edward Everett, was erected in St. Botolph's church in Boston, England, in 1857, in honor of Cotton, chiefly by contributions from his descendants in Boston, Mass.

COTTON, Sir **Robert Bruce,** an English antiquary, founder of the Cottonian library, born at Denton in Huntingdonshire, Jan. 22, 1570, died in London, May 6, 1631. He wrote many discourses and opinions upon matters of state policy, was knighted by James I. on his accession, and was a member of the first parliament of Charles I. He made a very valuable collection of ancient manuscripts, including many which had been scattered about the kingdom when Henry VIII. dissolved the monasteries. In 1629 he was arrested on a false suspicion of having written an obnoxious pamphlet, thrown into the tower, and his library was sequestrated. Though released, he was still denied access to his library; and to this deprivation he attributed the malady of which he died. His collection was augmented by his son and grandson, and, after having been partly destroyed by fire in 1731, was afterward transferred to the British museum. A catalogue of this library was published by the commissioners upon the public records in 1802.

COTTON MANUFACTURE. The old method of spinning cotton into thread was to attach a bunch of the carded fibre to the end of a forked stick called a distaff, which was held under the left arm; with the right forefinger and thumb the cotton was drawn out and twisted, the size and quality of the yarn being regulated only by the delicacy of the touch as this was passed through the fingers. The thread was wound upon a stick called a spindle, as often as sufficient length was twisted for this to reach the ground. Such was the practice of the "spinsters" of old England up to the time of Henry VIII., when the spinning wheel was introduced which had long been in use in India. In this the spindle was made itself to give the twist as it also wound up the thread, being made to revolve rapidly as with the right hand a large wheel was sent round, which carried the spindle by a cord or belt with greatly increased velocity. To a projecting hook at the end of this the thread was attached, and passed thence to the bunch of cotton held upon the distaff in the left hand of the operative. The irregularity of the cotton threads made by the old method limited their use to the woof only of fabrics, the warp being made of linen threads; but even then it was difficult for the weavers to procure the supplies they required of the families in their vicinity who spun for them. The demand for yarns in the English cotton-spinning districts stimulated a workman named James Hargreaves to the invention, in 1767, of the spinning jenny, in which eight spindles at first were set in a frame and made to spin as many threads at one operation; the ends passing from the spindles through a fluted wooden clasp, which was held in the left hand, and could be made to close upon the threads and hold them fast, as it was moved to and from the spindles. The name of the machine is said to be from gin, a contraction of engine. The number of spindles was afterward increased to 80. Hargreaves, driven from his home by the other spinners, built a small mill at Nottingham to spin yarns by his machines. Richard Arkwright came soon after to the same place with a new invention of spinning by rollers, the effect of which was to draw out the slivers or rolls, as they came from the carding machines, and by the slight pull elongate and straighten the fibres left crooked or doubled in the carding. By bringing together to the rollers from the cards eight of the fleeces or card ends, and passing these through together and causing them to unite into one sliver, elongating this at the same time to eight times the original length, a fleecy ribbon is obtained of great uniformity, which quality is still further increased by uniting four of these into one, and repeating the process by drawing them out to four times the original length. This improvement, and the others introduced by Arkwright in the carding machines, enabled him to produce an even and firm thread, suitable as well for the warp as the woof. With others he built the first mill in which the machinery was run by a water wheel. The machinery was hence known as the water frame, and the yarn as water twist. For the finest threads the doubling of the fibres was many times repeated. To strengthen the loose open cord before spinning, Arkwright caused the cylindrical can into which the sliver coiled itself to revolve upon a pivot during this process; and thus the sliver was changed into an incipient thread called roving, which was either wound upon a bobbin as it was received in the can, or was afterward wound off as a separate process. By the ingenuity of these two inventors an immense impulse was given to the fabrication of cotton cloth in England, and factories were rapidly established throughout the country. In 1782 Arkwright had about 5,000 persons employed in his mills, and by the sale of

his patents was rapidly acquiring a great fortune. In 1779 the invention of a machine was completed by Samuel Crompton of Bolton, which combined the jenny of Hargreaves with the roller spinning of Arkwright, and was called the mule, or mule jenny. The spindles in this were attached to a carriage or mule, which was run out on wheels about five feet, drawing out and stretching the roving as it was twisted at the same time into thread. As the mule was run back the spun threads were wound on the spindles, the processes of spinning and winding thus alternating. The original machines were designed for only 20 or 30 spindles; but as afterward enlarged they carried 2,200 spindles each, all of which were kept in operation by one attendant. This statement alone exhibits the enormous advance made upon the best method in use previous to these inventions, when a spinner with his wheel managed but one spindle. Single mills contain as many as 15,000 spindles, and from 300 to 400 looms for weaving. The demand for cotton produced by this increased capacity of working it off could never have been met except by the invention of a machine like Whitney's cotton gin, for cleaning the raw article with expedition, and thus preparing it for market. The inventions of the English gave them the monopoly of the manufacture, and were guarded with most scrupulous care, lest they should reach other countries.—The first machines for carding, roving, and spinning made in the United States were the work of two mechanics from Scotland, Alexander and Robert Barr, employed by Mr. Orr of East Bridgewater, Mass. The state made a grant in 1786 of £200 lawful money for the encouragement of the enterprise. The Beverly company in the same state commenced operations in 1787, and after expending £4,000 obtained in 1790 a grant of £1,000 from the legislature, by the aid of which they succeeded in introducing the manufacture of cotton goods, but with very imperfect machinery. In 1788 a company was formed in Providence, R. I., for making "home-spun cloth;" and they constructed their machinery from the best drawings to be obtained of the English models and plans, which were afforded them by Mr. Orr and the Beverly company. The carding and roving with these machines was effected in a very imperfect and slow manner by hand labor; the spinning frame with 32 spindles differed little from a common jenny, and was worked at first by a crank turned by hand. The machinery was sold to Moses Brown of Providence, who, together with Mr. Almy, had several hand jennies employed in private houses in Providence making yarns for the weft of mixed linen and cotton goods. Such operations could accomplish little in competition with the Arkwright machinery; and all attempts to procure plans of this failed. In November, 1789, there arrived in New York Samuel Slater, a young man just 21 years of age, who had spent about seven years in the cotton mills in Derbyshire, England, in various capacities up to that of general superintendent. He had qualified himself for the express purpose of removing to this country, and establishing the cotton manufacture by Arkwright's processes, even without the use of plans, which could not be passed through the custom house in England. To him the country is indebted for the introduction of the means of successfully conducting this manufacture. He repaired to Providence in January of the next year, and immediately formed an engagement with Messrs. Almy and Brown to construct the improved machinery. In December, 1790, the first Arkwright machinery was set in operation, consisting of three cards, drawing and roving, and a frame of 72 spindles, worked by the water wheel of an old fulling mill. By this machinery a large stock of yarns was accumulated in less than two years, besides what could be woven and disposed of. In 14 months from the time they began to work Mr. Brown advised the secretary of the treasury that machinery and mills could now be erected in one year of capacity to supply the whole country with yarn, and render further importation unnecessary. A new mill of small size was built in 1793 by Almy, Brown, and Slater, at Pawtucket, which commenced with 72 spindles, and was afterward considerably enlarged. Mr. Slater must have failed for want of experienced workmen in constructing his machinery, particularly the cards, if he had not himself been thoroughly competent to do all the varieties of the work. From this beginning other mills were added in Pawtucket by the same parties and others also, with whom Slater associated himself; and the hands employed carried the processes to Cumberland, R. I., where another factory was built in 1798. In 1806 Slater was joined by his brother, John Slater, from England; and soon after the village of Slatersville, R. I., was projected, a place which has since continued to prosper like many others in New England established at later periods for the purpose of prosecuting the same branch of industry. By a report made to congress in 1816, it appears that the business had increased from the consumption of 500 bales of 300 lbs. each in 1800, to 10,000 in 1810, and 90,000 in 1815; that 81,000,000 yards of cotton cloth, costing $24,000,000, were then manufactured, about 100,000 operatives, men, women, and children, were employed, and an aggregate capital of $40,000,000 was invested in the business. The importations of foreign cottons in 1815 and 1816, amounting, notwithstanding this home production, to the value of about $180,000,000, greatly checked the progress of the American manufacture; but this was subsequently encouraged by the tariff acts of 1824, 1828, and 1832, which imposed an *ad valorem* duty of 25 per cent. upon imported cotton goods. Up to the year 1813 the mills that had been put in operation were designed only for spinning; and the

twist was sold to the weavers, who made use of hand looms to convert it into cloth. In England also, though the power loom, the remarkable invention of a clergyman unskilled in mechanics, was in use, its employment was in establishments distinct from those in which the cotton was spun into yarn. The construction of this loom was unknown in the United States, and it was impossible to obtain any plan of it. In 1812 Francis C. Lowell of Boston, lately returned from England and Scotland, determined to introduce the weaving of the cloth in this country, and in conjunction with his brother-in-law, Patrick T. Jackson, set about the invention of a power loom. After numerous attempts, they succeeded in producing in the autumn of 1812 a satisfactory model; and procuring the services of a skilful mechanic, Paul Moody, afterward well known as the head of the machine shop at Lowell, they decided upon building a mill to work it. Finding it would be more profitable to combine the operation of spinning with the weaving, they built at Waltham, Mass., in 1813, a factory for about 1,700 spindles, and furnished it with looms also for weaving. This factory was probably the first in the world that combined all the processes necessary for converting the raw cotton into finished cloth. The first cotton mill in Lowell was erected in 1822.—The operations of preparing cotton for the loom are too numerous and complicated to admit of more than a very general description. As the bags or bales are opened at the mills, the first process is to mix thoroughly the cotton of the same staple and general qualities, that the result may be of perfectly uniform character. This is sometimes done in the following manner: The contents of a bale are spread uniformly over a space upon the floor prepared for it, and upon the layer thus made another bale is emptied and spread, and upon this another, and so on, the whole being continually trodden down by men and boys. The pile thus made is called a bing, and as the cotton is required for the mill it is raked down from the top to the bottom on one side of the pile, thus securing a mixture of the contents of all the bales. The mixing should be made with reference to the kind of yarn required, whether for warp or weft, coarse or fine, &c., and the sorting of the cotton for this purpose requires experience and good judgment. Some cottons, particularly those of long and short fibres, cannot be made to draw, rove, or spin well together. The cotton taken from the bing is too impure for spinning until it has been passed through several processes, by which the dirt is winnowed out and the matted lumps are opened and the fibres loosened and cleaned. Different methods are employed to effect this result, according to the quality of the fibre. The finest, which are intended for the most delicate yarns and laces, are beaten by hand with twigs upon a frame; the surface of the frame is a sort of network through which the dust and impurities fall. The cotton, thus beaten or batted, is called batting. Other qualities are passed through a hollow conical machine called a willow, or machines with other names that answer the same purpose, in which the cotton is pulled about and shaken by the action of spikes upon a revolving axis, the dust and impurities as they separate falling through a grating, and being blown through a shoot by a strong current of air created by a fan blower. The cotton at the same time is passed through another shoot to be subjected to the succeeding operations of further cleaning, or to be delivered to the carding machine. The further cleaning, called scutching, is similar in principle to the willowing, the operation being more thoroughly accomplished by beating with blunt knives upon an axis revolving with great rapidity. The cotton is regularly fed to the machine by being spread in equal quantities upon the feeding apron, which carries it on in a broad layer till it is taken up by a pair of rollers, and thus presented to the beating knives; in a second part of the machine the same operation is repeated, and as the cotton passes out it is received by the spreading or lapping machine, in which it is flattened into a filmy sheet of uniform thickness and then wound upon a roller. As one roller is filled it is taken away to the carding machine, and an empty one is set in its place. This process is conducted with such perfect regularity, that the weight of the cotton fed to the machine determines the fineness of the thread afterward produced. The carding process has already been referred to as perfected by Arkwright. It is one of the most ingenious of the operations of this manufacture. The improved machines consist of a large drum covered with cards of wire teeth revolving in a box, which is lined with cards of teeth that come nearly in contact with those upon the drum; or four small cylinders covered with cards are placed within the same box, and made to revolve in an opposite direction to the large cylinder and at a different velocity. Stationary cards are also fixed to a part of the upper lining of the box. The machine is fed by a pair of rollers, which unwind the sheet of cotton from the roller of the spreading machine, and pass it into the cards. These lay out the fibres in one direction, and leave behind upon the stationary cards lumps and imperfections that have escaped the other cleaning operations. As the fibres are carried over on the large cylinder, they are gathered and taken in a fine fleece by the teeth of another cylinder called a doffer, which revolves slowly in a contrary direction. When this has made half a revolution the cotton is stripped from it by a rapidly vibrating toothed knife or comb, that extends the whole length of the doffer. It removes the cotton in a fleecy ribbon, and this, called a card-end or sliver, is drawn through a small funnel which consolidates it, and then between rollers which compress and elongate it, and finally deliver it

into a tin cylinder. Cards are of various degrees of fineness according to the quality of yarn required; and for fine spinning two machines are used, the one coarse, called a breaker, succeeded by another called a finishing card. But the finest work of this kind accomplished by machinery is done by the combing machine of Heilman, patented in France. With this the short fibres and all impurities are separated from the long-stapled cotton, and the most perfect wool is prepared suitable for the manufacture of the finest muslins and laces. The principle of drawing out the sliver and repeatedly doubling this to produce a uniform roving has already been explained. Various machines have been introduced for twisting this roving and winding it upon bobbins. The fly frame, which came into use in 1817, is one of the most ingenious and efficient, and has taken the place of the old roving machine of Arkwright. In this frame spindles are set vertically in one or two rows at equal distances apart, each passing through a bobbin which is loosely attached to it, and has a play equal to its length up and down the spindle. At the top of the spindle is suspended a fly with two dependent legs, one of which is solid, and merely a counterpoise to the other, which is hollow, and admits through it the roving, which enters the fly by an eye in the centre, immediately above the top of the spindle. As the spindle revolves it carries the fly with it, thus twisting and winding the roving at the same time around the bobbin. The supply by the rollers is exactly proportioned to the speed of the spindles, which is uniform, and thus the twist is even in equal lengths; but as the fly winds the roving around the bobbin, and this consequently increases in circumference, the loosely twisted yarn would be more and more strained in the winding, were it not for ingenious contrivances which give a varying revolution to the bobbin exactly adapted to the circumference it has attained. It has moreover an alternating motion up and down the spindle, by which the roving is wound upon it in perfectly even layers. This machine, in the perfect adaptation of its parts to each other, and the mathematical accuracy of its operations, furnishes a most instructive study in this department of mechanics. The rovings are next to be spun into yarn, and this is accomplished either by the mule jenny, already partially described, or by the throstle machine. This is similar to the bobbin and fly frame in principle. As the roving is unwound from the bobbins, it is again elongated by passing between three pairs of rollers which revolve at different velocities, and it then passes through an eye in the foot of another flyer, which carries it around another bobbin as it also twists it. This bobbin has no motion adjusted to that of the spindle, but revolves with some friction upon the spindle, being drawn round by the thread, as the pull becomes sufficient to overcome the friction. The revolutions of the spindle in some machines are 5,000 in a minute, and its production in a week is then estimated about 27 hanks of No. 32. In consequence of the uncertain strain in winding up on the bobbin, the yarns are more likely to break than when they are spun by the mule, and this machine has consequently proved best adapted for the finer qualities of yarn. On account of the extra attention it required, and the time lost in the interruption to the spinning, as the carriage was run back and the yarns spun in the drawing out were wound upon the cops, the throstle frame was regarded as the most economical for spinning the coarse qualities as low as No. 32; but the improved self-acting mule has proved so much more economical to attend that it is now advantageously employed for spinning even the coarser yarns. As long ago as 1792 yarns were spun with the mule in Manchester, of the fineness of 278 hanks to the pound of 840 yards each. It was sold to the muslin manufacturers of Glasgow at 20 guineas the pound. These hanks are prepared by the next process, called reeling. The cops from the mule, or the bobbins from the throstle frame, are set in a frame so that they can be wound off upon a large six-sided reel, extending along the top of the same frame. With a reel of the circumference of 1½ yard, 560 revolutions give the length of a hank. Many of these are wound along the length of the reel at the same time. When taken off they are weighed separately, and the weight of each designates the fineness of the yarn. The number expresses the number of hanks required to weigh a pound. The coarsest yarns weigh about half a pound to the hank; but the common qualities for coarse spinning run from 10 to 40 to the pound. The finest spinning seldom exceeds 300 hanks to the pound. No yarn finer than No. 350 was made in England previous to 1840. It has since been made as fine as No. 2,150, but even No. 600 is too delicate to be handled or to serve any useful purpose. The finer yarns are singed by being run through a gas flame; they are then passed over a brush, and run through a hole in a piece of brass just large enough to admit the yarn. Any knot or bulge stops the yarn, and the defect is immediately remedied. The hanks are made up into cubical bundles of 5 or 10 lbs., and pressed and tied, when they are ready for the loom or for being twisted into thread, properly so called. Of this there are several kinds, as sewing thread, lace thread, stocking thread, &c. They are all produced by doubling and twisting together two yarns or more, and by machines very similar to the throstle frame; the yarns as they are twisted are passed through water or a weak solution of starch, which gives more firmness and strength to the thread. For further data connected with this manufacture, see the articles Calico, Calendering, and Loom.—Cotton is distinguished from linen by the peculiar structure of its fibre when seen under a powerful microscope, the form being flattened, crooked, and

shrivelled, while that of the linen fibre is round and straight with occasional cross knots or joints. Linen yarn also becomes yellow in a strong and hot solution in water of caustic potash, while cotton remains white, or is colored very slightly yellow. The two fibres may also be distinguished by the different effects produced upon them by concentrated sulphuric acid. The stuff to be tested must first be thoroughly cleaned by boiling and repeated washing in pure water. When well dried it is dipped in the acid and left from half a minute to two minutes. The cotton threads become immediately transparent, the linen remaining white. It is then taken out and put into water to wash out the gummy matter produced by the cotton. On being dried, if the experiment has been well conducted, the yarns of cotton will have disappeared; but if the immersion in acid has been too long, the linen also becomes transparent and eaten by the acid. Another method by which cotton is detected in unbleached linen is to place the stuff, after it is well washed in boiling water and dried, in a mixture of two parts of dried nitrate of potash and three parts of sulphuric acid, and leave it for eight or ten minutes. It is then washed and dried and treated with ether, to which a little alcohol is added. If cotton was present in the stuff, the ethereal liquid is thickened by the production of collodion. This may be separated, leaving the residue pure linen. When the fibre of cotton is thoroughly consumed, the remaining ash is found to be about 1 per cent. of the original weight.

—The number of cotton factories in the United States in 1810 was reported to be 241, and the number of spindles estimated at 96,400, an average of 400 for each mill. According to a report of a committee of congress in 1815, $40,000,000 was then invested in cotton manufactures, and 100,000 persons were employed; 27,000,000 lbs. of cotton were consumed, producing 81,000,000 yards of cloth, valued at $24,300,000. In Rhode Island, Massachusetts, and Connecticut were 165 mills, with 119,310 spindles; and it has been estimated that the total number of spindles at that time was 350,000. Power looms soon afterward coming into general use, as already stated, the number of spindles increased to 1,500,000 in 1830, and 1,750,000 in 1835. Complete and trustworthy statistics of cotton manufactures seem to have been first reported by the census of 1840. There were then in the United States 1,240 mills, with 2,284,631 spindles, and 129 dyeing and printing establishments. These establishments employed 72,119 hands, and produced goods valued at $46,350,430. The amount of capital invested was $51,102,359. The leading cotton manufacturing states were Massachusetts, having 278 mills with 665,095 spindles; Rhode Island, 209 mills with 518,817 spindles; New York, 117 mills with 211,659 spindles; and Connecticut, 116 mills with 181,319 spindles. There were no cotton mills in Illinois, Missouri, Michigan, Florida, Wisconsin, Iowa, or the District of Columbia. The following totals for the United States, from the federal census, will afford a comparison of this most important industry with its condition prior to the civil war:

MILLS, &c.	1870.	1860.	1850.
Establishments	956	1,091	1,094
Looms	157,810	126,313	.....
Spindles	7,132,415	5,235,727	.....
Hands	135,369	122,028	92,286
Capital	$140,706,291	$98,585,260	$74,500,931
Wages	$39,044,132	$23,938,236	.....
Raw cotton, lbs.	398,802,257	422,704,975	288,558,000
All materials	$111,736,936	$57,285,534	$34,835,056
All products	$177,489,739	$115,681,774	$65,501,687

A comparison of the figures of 1870 with those of 1860 presents several notable circumstances, chief among which is a falling off in the number of establishments in 1870 of about 12⅝ per cent. This may be attributed to the natural tendency of industries of this nature to concentrate in great establishments; and also to the fact that at the beginning of the war many cotton factories were transformed into woollen mills. This view is strengthened by the fact that the number of looms was 24½ per cent., and the number of spindles more than 28 per cent., greater in 1870 than in 1860. The increase in the amount of capital employed was about 30 per cent., which has been attributed to the increased value of land, buildings, and machinery, while the increase in the wages paid amounted to nearly 43 per cent. There was a decrease in the quantity of raw cotton consumed amounting to 24,402,718 lbs., or nearly 6 per cent., while there was an increase in the value amounting for all materials to $54,451,402, or more than 94 per cent. The increase in the total cost of labor and raw materials amounted to $69,557,296, or about 85 per cent. The value of the goods produced in 1870 was $61,807,965, or 53 per cent. greater than in 1860. Direct comparison cannot be made between the quantities produced in 1870 and 1860, owing to the paucity of the details in the returns of the latter year; but the following statement shows that in 1870 a greater quantity of goods was produced from a smaller amount of raw material, which is explained by the average lighter weight of the fabrics:

	1870.	1860.
Products, stated in lbs.	67,005,978	60,209,559
" stated in yards	1,146,607,262	1,148,252,406
" stated in pieces	3,262,952	.....
" stated in dozens	11,560,241	.....

In 1870, 13,341 more hands were employed to manufacture into goods 24,400,000 lbs. less cotton than in 1860. The average annual wages was $288 *per capita* in 1870, and $196 in 1860, showing an increase of $92 per head per annum, or 47 per cent. In 1870 the value of the product per head of operatives was $1,341, and in 1860 $948, showing an increase in value

of the *per capita* production of $363, or 38½ per cent. With this gain of 38½ per cent. in the value of the product of each hand, the average hand gets 47 per cent. more wages. The condition of the cotton manufacturing interest in the United States in 1870 is shown by the following table from the census report, which is regarded by leading authorities as very accurate:

STATES. AND TERRITORIES.	Establishments.	Steam engines, horse power.	Water wheels, horse power.	MACHINES. Looms.	MACHINES. Frame spindles.	MACHINES. Mule spindles.	Hands employed.	Males above 16.	Females above 15.	Youth.	Capital.	Wages.
The U. States.	956	47,117	99,191	157,310	3,694,477	3,437,938	135,369	42,790	69,637	22,942	$140,706,291	$39,044,132
Alabama	13	175	824	632	19,802	8,244	1,032	303	445	284	931,000	216,679
Arkansas	2	15	10	.....	125	1,000	17	8	3	6	13,000	4,100
Connecticut	111	860	10,840	11,943	294,760	302,382	12,086	4,443	4,734	2,909	12,710,700	3,246,783
Delaware	6	500	370	771	18,634	10,900	726	225	286	215	1,165,000	190,069
Georgia	34	290	2,920	1,887	74,148	11,454	2,846	1,147	1,080	619	3,433,265	611,866
Illinois	5	47	90	16	1,856	.....	98	26	31	41	151,000	25,500
Indiana	4	1,081	80	448	17,360	.....	504	119	179	206	551,500	113,200
Iowa	1	6	.....	.....	.....	.....	6	3	3	.....	1,500	275
Kentucky	5	330	60	72	7,060	674	269	77	71	121	405,000	57,951
Louisiana	4	255	.....	292	10,200	2,884	246	123	57	66	592,000	60,600
Maine	23	320	8,018	9,902	259,594	200,178	9,439	2,606	6,246	587	9,839,685	2,565,197
Maryland	22	1,510	1,991	1,947	82,212	6,900	2,860	688	1,452	720	2,734,250	671,933
Massachusetts	191	17,217	32,310	55,343	1,255,552	1,363,989	43,512	13,694	24,065	5,753	44,714,375	13,589,305
Mississippi	5	270	96	152	2,526	1,000	265	78	88	99	751,500	61,833
Missouri	3	375	.....	415	16,015	700	861	107	154	100	489,200	120,300
New Hampshire	36	915	17,777	19,091	447,795	302,048	12,542	3,752	7,490	1,300	13,332,710	3,989,853
New Jersey	27	1,799	1,260	2,176	107,542	93,038	3,514	1,086	1,745	683	2,762,000	1,009,351
New York	81	4,898	5,202	17,218	131,380	361,193	9,144	2,608	4,546	1,990	8,511,336	2,626,131
North Carolina	33	120	1,533	618	37,957	1,940	1,453	258	916	279	1,030,900	182,951
Ohio	7	305	81	208	14,320	8,920	462	216	147	99	555,700	113,520
Pennsylvania	138	7,440	1,983	12,862	232,528	201,718	12,730	3,859	6,097	2,774	12,550,720	3,496,986
Rhode Island	139	7,391	10,726	18,075	503,797	539,445	16,745	5,583	8,028	3,134	18,834,300	5,224,650
South Carolina	12	.....	955	745	34,683	257	1,123	289	508	326	1,337,000	257,680
Tennessee	28	470	676	313	22,485	5,438	890	252	463	175	970,650	178,156
Texas	4	268	.....	235	8,478	400	291	184	52	55	496,000	68,211
Utah	3	.....	39	11	1,020	.....	16	10	2	4	42,000	6,300
Vermont	8	50	600	628	16,532	12,286	451	125	242	84	670,000	125,000
Virginia	11	210	750	1,310	76,116	1,000	1,741	921	507	313	1,128,000	229,750

The amount of cotton used, the value of all materials, and the amount of the most important products, together with the value of all products, were as follows:

STATES AND TERRITORIES.	MATERIALS. Cotton used.	MATERIALS. Value of all materials.	PRODUCTS. Sheetings, shirtings, and twilled goods.	PRODUCTS. Lawns and fine muslins.	PRODUCTS. Print cloth.	PRODUCTS. Yarn not woven.	PRODUCTS. Warps.	PRODUCTS. Ginghams and checks.	All products.	Value of all products.
	Pounds.	*Dollars.*	*Yards.*	*Yards.*	*Yards.*	*Pounds.*	*Yards.*	*Yards.*	*Pounds.*	*Dollars.*
The U. States.	398,308,257	111,736,936	478,204,513	34,533,462	489,250,053	30,301,087	73,018,045	39,275,244	349,314,592	177,489,739
Alabama	3,249,523	764,965	4,518,403	.....	.....	548,750	.....	1,039,321	2,843,000	1,088,767
Arkansas	66,400	13,780	.....	.....	.....	.....	.....	.....	53,125	22,562
Connecticut	31,747,309	8,818,651	52,655,693	8,338,677	34,279,875	1,281,780	11,367,664	1,671,309	27,296,710	14,026,334
Delaware	2,587,615	704,733	2,396,000	.....	.....	1,475,600	.....	306,600	2,437,649	1,060,898
Georgia	10,921,176	2,504,758	13,739,847	.....	.....	4,097,167	.....	1,653,434	9,596,800	3,648,973
Illinois	857,000	177,525	.....	.....	.....	.....	1,305,000	.....	739,000	279,000
Indiana	2,070,318	542,875	3,831,059	.....	.....	74,880	3,600,000	.....	1,779,481	778,047
Iowa	20,000	4,950	.....	.....	.....	.....	.....	.....	18,000	7,000
Kentucky	1,584,625	375,048	.....	.....	.....	637,000	530,000	.....	1,389,000	498,960
Louisiana	748,525	161,485	438,800	.....	.....	112,000	.....	926,000	629,025	251,550
Maine	25,887,771	6,746,780	65,614,092	.....	.....	490,450	78,000	.....	23,627,155	11,844,181
Maryland	12,693,647	3,409,426	18,839,625	2,358,454	.....	1,247	90,550	564,240	10,496,677	4,852,808
Massachusetts	130,654,040	37,371,599	22,123,147	12,434,858	229,613,105	2,108,952	33,712,996	18,690,000	113,808,458	59,493,153
Mississippi	580,764	123,568	407,788	.....	1,712	275,461	.....	206,202	529,573	234,445
Missouri	2,196,600	481,745	2,150,000	.....	.....	1,044,000	14,000	.....	1,949,900	798,050
New Hampshire	41,469,719	12,318,867	89,326,701	75,000	40,843,969	132,200	.....	1,845,199	35,003,432	16,999,672
New Jersey	7,920,035	1,964,758	4,174,000	2,442,000	11,000,000	1,729,075	3,120,950	880,000	6,723,748	4,015,768
New York	24,783,351	6,990,626	25,382,532	1,327,336	82,335,883	250,076	5,097,000	.....	22,113,630	11,178,211
North Carolina	4,238,276	963,809	3,954,607	.....	.....	2,180,062	1,486,000	.....	3,444,166	1,845,052
Ohio	2,226,400	493,704	1,294,500	.....	.....	957,900	810,000	.....	1,918,000	681,835
Pennsylvania	32,953,318	10,724,052	65,706,865	.....	9,704,795	4,510,486	2,944,335	15,101,170	32,494,857	17,490,080
Rhode Island	44,630,787	13,268,315	77,973,206	7,557,137	75,183,628	6,155,692	6,281,150	.....	38,503,060	22,049,203
South Carolina	4,756,823	761,469	8,273,900	.....	.....	808,781	260,000	.....	4,125,210	1,529,937
Tennessee	2,872,582	595,789	1,976,450	.....	.....	1,229,098	.....	.....	2,381,477	941,542
Texas	1,077,118	216,519	739,778	.....	.....	46,175	.....	1,261,769	887,695	374,598
Utah	23,500	7,051	700	.....	.....	21,280	.....	.....	23,195	16,803
Vermont	1,235,652	292,269	142,000	.....	6,287,186	.....	2,320,400	.....	1,051,000	546,510
Virginia	4,255,383	937,820	12,544,820	.....	.....	132,975	.....	130,000	3,456,569	1,435,800

The details of this industry were more fully reported by the census of 1870 than at any former period. Besides the items in the above tables the following are given:

Materials used:	
Cotton yarn	6,222,189
Cotton warps	136,100
Cotton waste	5,234,260
Total, lbs	409,900,806
Mill supplies, value	$10,910,672
Products:	
Spool thread, dozens	11,560,241
Bats, wicking, and wadding, lbs	11,118,127
Table cloths, quilts, and counterpanes, number.	493,892
Seamless bags, number	2,767,060
Cordage, lines, and twines, lbs	5,057,454
Flannel, yards	8,890,050
Thread, lbs	906,068
Cotton waste, lbs	7,921,449
Tape and webbing, lbs	484,400
Seamless bags	405,585
Cassimeres, cottonades, and jeans, yards	13,940,895
Other products, lbs	10,811,028

In 1869 Mr. B. F. Nourse, after a careful computation, reported the following results relating to the manufacture of cotton in this country: That the average annual consumption of cotton in the United States was at the rate of 65 lbs. per spindle; 60·7 lbs. per spindle in the northern and 138·12 in the southern states. The average size or number of yarn produced was 27⅛ in the United States, 28 in the north and 12⅞ in the south. This indicated a constant tendency to finer work as labor became more skilled and raw material more costly in proportion. Until within a few years the number of yarn was as coarse as No. 14 in a large part of the northern production; the average size of yarn was estimated to be No. 23 in 1860, No. 23 in 1850, and No. 20 in 1810.—Although England was among the latest of all countries to receive the cotton manufacture, it is now without a competitor in this industry. This has been attributed in a large measure to the abundance of fuel and iron which exist in combination in several English counties, but more especially in Lancashire, the great seat of the cotton manufacturing industry. The better machinery now affords a higher rate of production for the same yarn than was formerly attainable. The exact period when the manufacture was introduced into England is uncertain; but as early as 1641 it had become established in Manchester, and even then cotton goods were exported. Its growth has been rapid and steady until the capital invested, by a recent estimate, has reached the sum of nearly £60,000,000. The number of cotton factories, machines, hands, &c., as reported by the government inspectors of factories in 1871, were as follows:

FACTORIES.	Number of factories.	Number of carding machines.	Number of combing machines.	Number of spinning spindles.	Number of doubling spindles.	Number of power looms.	Number of power loom weavers.	Amount of moving power.		Persons employed.		
								Steam.	Water.	Male.	Female.	Total.
Factories employed in spinning only:												
England	1,085	32,308	1,449	17,292,982	2,564,848	.....	.....	120,229	3,663	55,651	64,036	119,687
Scotland	20	2,078	70	648,892	11,333	.....	.....	3,675	935	903	3,497	4,400
Ireland	3	98	99	79,992	422	.....	.....	475	20	59	174	233
Total	1,108	34,484	1,618	18,031,366	2,586,603	.....	.....	124,379	4,618	56,613	67,707	124,320
Factories employed in weaving only:												
England	649	.....	....	.....	5,318	175,432	57,555	22,552	376	29,453	50,674	80,127
Scotland	36	.....	....	.....	1,600	13,678	6,845	2,512	16	1,238	8,327	9,565
Ireland	8	.....	....	.....	.....	2,184	1,181	352	30	414	1,355	1,769
Total	693	.....	....	.....	6,918	191,294	65,581	25,416	422	31,105	60,356	91,461
Factories employed in spinning and weaving:												
England	513	30,342	233	15,309,505	845,785	235,904	93,808	135,974	2,505	85,844	126,234	212,078
Scotland	17	760	1	540,594	10,528	11,435	4,807	7,156	526	1,411	7,721	9,132
Ireland	2	168	....	44,912	.....	1,253	683	410	240	923	1,142	2,065
Total	532	31,270	234	15,895,011	856,313	248,591	99,298	143,540	3,271	88,178	135,097	223,275
Factories not included in either of the above descriptions:												
England	124	59	28	1,144	75,376	.....	.....	1,847	59	845	2,233	3,078
Scotland	25	147	26	67,700	207,724	790	462	5,282	20	1,596	6,267	7,863
Ireland	1	....	....	.....	603	.....	.....	16	..	60	30	90
Total	150	206	54	68,844	283,703	790	462	7,145	79	2,501	8,530	11,031
Total of cotton factories:												
England	2,371	62,709	1,710	32,613,631	3,491,327	411,336	151,363	280,602	6,603	171,793	243,177	414,970
Scotland	98	2,985	97	1,256,686	231,185	25,903	12,114	18,625	1,497	5,148	25,812	30,960
Ireland	14	266	99	121,104	1,025	3,437	1,864	1,253	290	1,456	2,701	4,157
Grand total	2,483	65,960	1,906	34,695,221	3,523,537	440,676	165,341	300,480	8,390	178,397	271,690	449,087

The "doubling spindles" are for a secondary process, and add nothing to the consuming capacity of the factories. Of the total number of factories above given, 1,789 were in Lancashire. Of the persons employed, 43,281 were children under 13 years of age, including 20,139 girls. The following table shows the number of spinning spindles running, the total weight of cotton spun, and the pounds per spindle in each year named:

YEARS.	Spindles.	Total lbs. cotton spun.	Lbs. per spindle.
1850	20,977,017	611,000,000	29·13
1856	28,010,217	866,700,000	30·94
1861	30,430,467	978,300,000	32·15
1868	32,000,014	993,489,000	31·05
1869	30,000,000	941,586,000	31·38
1870	32,000,000	1,052,470,000	32·89
1871	33,750,000	1,145,455,000	33·94
1872	35,800,000	1,170,600,000	32·07

The exports of cotton manufactures from Great Britain for a series of years are shown in the following table. Of the plain piece goods exported in 1871, £9,824,865 worth was sent to British India, £4,778,608 to China, £2,956,705 to Egypt, and £1,276,431 to the United States; of cotton yarn and twist, £4,054,942 to Holland, and £3,846,980 to Germany; of printed goods, £2,093,528 to the United States.

MANUFACTURES.	1867.	1868.	1869.	1870.	1871.
Cotton yarn	£14,871,617	£14,714,899	£14,095,449	£14,671,185	£15,061,204
Piece goods, white or plain	33,477,117	31,095,692	30,264,123	33,922,022	33,303,025
" " printed, dyed, or colored	19,389,101	18,933,824	19,367,794	19,086,746	19,563,937
" " of mixed materials (cotton predominating)	261,945	235,600	290,525	339,437	765,772
Lace and patent net	470,420	475,466	632,213	839,048	969,559
Stockings and socks	387,127	364,572	325,816	292,630	291,630
Thread for sewing	1,115,315	1,113,977	1,159,406	1,208,147	1,224,969
Hosiery and small wares	864,341	752,742	991,128	1,057,180	1,641,315
Total	£70,836,983	£67,686,772	£67,116,954	£71,416,345	£72,821,411

The leading facts of the cotton manufacturing industry in Great Britain are exhibited in the following tables compiled by Mr. Nourse from the circulars of Ellison, Tibbitts, and co. of Liverpool, which are commended for their accuracy by English cotton merchants:

CONDENSED EXHIBIT OF THE COTTON MANUFACTURE AND TRADE OF GREAT BRITAIN FOR 36 YEARS.

YEARS.	Raw cotton actually consumed, pounds.	Cost of cotton in dollars, $4 80 per £ sterling.	Exported goods and yarns, pounds.	Home consumption, goods and yarns, pounds.	Value of goods and yarns produced, dollars.	Ratio of value of cotton used to the value of goods and yarns made from it.	Amount of difference or value added by manufacturing, dollars.
Average per year. 5 years, 1835–'39	371,475,000	63,522,672	212,176,715	116,047,465	193,604,015	100 @ 305	130,051,343
Average per year. 5 years, 1840–'44	509,902,000	56,641,920	284,636,665	166,627,039	204,208,892	100 @ 362	147,566,972
Average per year. 5 years, 1845–'49	576,780,000	59,101,920	337,065,453	174,384,848	202,132,666	100 @ 342	143,030,746
Average per year. 5 years, 1850–'54	765,900,000	83,981,280	413,933,262	210,788,222	245,804,910	100 @ 293	161,823,630
1855	889,200,000	94,175,462	528,029,766	227,250,234	262,735,295	100 @ 279	168,559,833
1856	856,700,000	106,220,075	562,952,000	208,078,200	273,959,290	100 @ 258	167,739,215
1857	825,027,000	119,040,000	583,110,000	156,000,000	287,222,400	100 @ 241	168,182,450
1858	907,836,000	119,092,800	652,663,000	158,000,000	312,803,200	100 @ 254	183,710,400
1859	977,623,000	132,369,600	693,072,000	172,000,000	346,670,400	100 @ 262	214,300,800
1860	1,079,321,000	138,768,000	740,113,000	173,000,000	386,822,400	100 @ 279	248,054,400
1861	1,005,477,000	154,484,000	674,132,000	174,000,000	356,788,800	100 @ 231	202,204,800
1862	449,821,000	128,323,200	412,684,000	102,000,000	205,084,800	100 @ 160	76,761,600
1863	476,445,000	195,307,200	392,239,000	93,000,000	287,016,000	100 @ 147	91,708,800
1864	561,196,000	251,817,600	403,999,000	110,000,000	366,273,600	100 @ 146	114,456,000
1865	718,651,000	226,883,601	475,920,000	150,000,000	399,676,800	100 @ 176	172,843,199
1866	890,721,000	249,398,400	625,602,000	145,000,000	493,262,400	100 @ 198	243,864,000
1867	954,517,000	198,057,600	693,700,000	145,000,000	418,516,800	100 @ 212	220,459,200
1868	996,197,000	196,747,200	753,166,000	160,000,000	440,241,600	100 @ 224	243,494,400
1869	936,019,000	210,105,600	704,713,000	125,000,000	413,745,600	100 @ 197	203,640,000
1870	1,071,770,000	202,296,000	802,300,000	140,000,000	447,096,000	100 @ 221	244,800,000

VALUE OF THE GOODS PRODUCED, AND COST OF PRODUCTION.

YEARS.	Value of goods produced.	Value of cotton used.	Wages and other expenses paid.	Total cost.	Leaving for interest of capital and profits.	Same in dollars.	Ratio of cost of cotton used to wages and other expenses.
1858	£63,084,000	£24,811,000	£27,910,000	£52,721,000	£10,363,000	49,742,400	100 @ 112
1859	72,223,000	27,577,000	30,330,000	57,907,000	14,316,000	68,716,800	100 @ 110
1860	80,598,000	28,910,000	33,600,000	62,510,000	18,088,000	86,822,400	100 @ 116
1861	74,331,000	32,205,000	31,360,000	63,565,000	10,766,000	51,676,800	100 @ 97
1862	42,726,000	26,734,000	14,520,000	41,254,000	1,472,000	7,065,600	100 @ 54
1863	59,795,000	40,689,000	15,690,000	56,379,000	3,416,000	16,396,800	100 @ 39
1864	76,307,000	52,462,000	18,680,000	71,142,000	5,165,000	24,792,000	100 @ 36
1865	83,266,000	47,257,000	23,850,000	71,107,000	12,159,000	57,363,200	100 @ 50
1866	103,121,000	51,958,000	31,288,000	83,246,000	19,875,000	95,400,000	100 @ 60
1867	87,191,000	41,263,000	33,338,000	74,600,000	12,591,000	60,436,800	100 @ 81
1868	91,717,000	40,989,000	34,940,000	75,929,000	15,357,000	73,713,600	100 @ 85
1869	86,197,000	43,772,000	32,045,000	75,317,000	11,754,000	56,419,200	100 @ 73
1870	98,145,000	42,145,000	.....	.....	.....	.....	.....

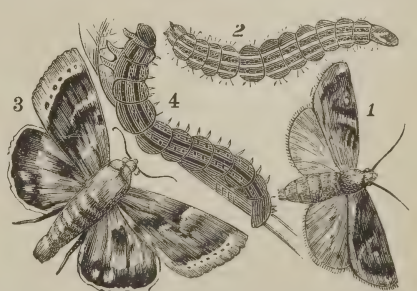
One of the most important incidents in the history of the cotton industry was the great depression produced in the English manufactures by the civil war in America, known as the "cotton famine." In 1860, immediately preceding the beginning of the war, this industry had attained in England a degree of prosperity not before known. The imports of raw cotton for that year reached the unprecedented amount of 1,390,938,752 lbs., valued at £35,756,889, of which 1,140,599,712 lbs. were retained for home consumption. The number of cotton mills in Great Britain was 2,650 (of which 1,920 were in Lancashire), with more than 30,000,000 spindles and 350,000 power looms, and employing 440,000 hands, of whom 56 per cent. were females and 10 per cent. were children. The capital invested in mills and machinery was £54,000,000, while the wages paid in that year amounted to £11,500,000. The cotton goods manufactured for home consumption were valued at £24,000,000; and the exports, consisting of calico, muslin, yarn, hosiery, &c., amounted to £52,000,000; making the total value of all cotton manufactures £76,000,000, a sum which exceeded the total imperial revenue for that year. Of the vast amount of cotton imported in 1860, 1,115,890,608 lbs. came from the United States. This, the greatest source of supply, was now cut off by the war, which opened early in 1861. The price of American cotton rose rapidly from £3 4*d.* per cwt. in 1860 to £10 2*s.* 4*d.* in 1862, £11 5*s.* 8*d.* in 1863, and £13 11*d.* in 1864; and there was a corresponding advance in the price of cotton from other countries. The extent of this increase in value is better indicated by a comparison of the quantities and values of the total imports of cotton during the years of the depression:

YEARS.	Total imports, lbs.	Value.
1860	1,390,938,752	£35,756,889
1861	1,256,984,736	38,653,398
1862	523,973,296	31,093,045
1863	670,084,128	56,282,294
1864	894,102,384	78,219,401
1865	978,502,000	66,041,400
1866	1,377,514,096	77,530,118

Moreover, the extended operations of the factories in 1860 had produced in the markets a supply of manufactured goods far beyond the demand. This fact, in conjunction with the unprecedented increase in the price of the raw material, rendered manufacturing less profitable than before, and led to the closing of many mills and the reduction of the hours of labor in others. Many persons were thus deprived of employment, and great suffering ensued. In November, 1862, there were 208,000 persons in the Lancashire district receiving out-door parochial relief, and 144,000 others received aid from subscribed funds; there were at the same time 20,000 mill girls at the sewing schools which had been organized to teach them sewing as a means of subsistence. The subscriptions to meet the distress reached the sum of £2,000,000, while more than £1,200,000 had been advanced by the government for public works in the cotton districts, chiefly to yield £600,000 or £700,000 wages to the unemployed cotton hands. No precise date can be given as the termination of this depression, since the change to the normal state of affairs was gradual. In 1866, however, the usual supply of cotton was again received from the United States. The losses for three years consequent on this calamity were estimated by Dr. Watts of Manchester, in his work on the "Facts of the Cotton Famine," at £66,225,000; being £28,500,000 losses by employers, £33,000,000 by employees, and £4,725,000 by shopkeepers. Other authorities estimated the money losses at £70,000,000. The great decrease in supply of American cotton caused a marked increase in the imports from other countries, India, Egypt, Brazil, and the West Indies, as indicated in a preceding table; but as the cotton from these countries is inferior to American cotton for manufacturing purposes, Great Britain is still supplied mainly from the United States.

COTTONWOOD, a S. W. county of Minnesota, watered by the Des Moines and affluents of the Big Cottonwood river; area, 725 sq. m.; pop. in 1870, 534. The St. Paul and Sioux City and the Winona and St. Peter railroads are to traverse it. The estimated value of farm productions for 1870 was, $14,900; of live stock, $12,420.

COTTON WORM, the caterpillar of an owlet moth, of the tribe of *noctuæ* (*N. xylina*, Say). The perfect insect is of a triangular shape, about an inch in length; the upper wings reddish gray, a dark spot with a whitish centre in the middle; the under wings are darker. The caterpillars have 16 legs, but the foremost prop legs are so short that in creeping they arch up the back like the geometers or span worms; the color is green, with light yellow stripes and black dots along the back; the second and third generations are darker than



Cotton Worm.—1, 2. Noctua xylina and larva. 3, 4. Heliothes and larva.

the first; they grow to the length of an inch and a half. The eggs, from 10 to 15, are deposited on the under surface of the tender leaves, to which they are firmly attached, and

of a color resembling the leaf; the period of incubation is variously stated from 6 to 15 days, depending probably on the heat of the season; the time of hatching is at night, and the young begin to eat very soon, growing very rapidly; the skin is changed several times before they attain their full growth. In 15 to 20 days after attaining the full size they cease to feed, and form an imperfect cocoon of a leaf and silk; in this the chrysalis state is passed, from 10 to 12 days; after this the moths lay their eggs, and die after a period of about a week, or, according to some observers, survive mild winters. This insect is in some years exceedingly destructive to the cotton, sometimes cutting off the entire crop of certain districts; it appears often in a sudden and unaccountable manner, as if it must migrate from the south. They were first noticed as destroyers of cotton about the year 1800, since which their ravages have been more or less serious almost every year; it is believed by some that they appear at intervals of three years in the same districts, and that their greatest ravages occur after intervals of 21 years; the years 1804, 1825, and 1846 were remarkable in this respect; the time of year varies from June to October. A moderate degree of cold is sufficient to kill them, though moisture and strong winds do not appear to disturb them. They devour both the short-staple and the long-staple cotton, and rarely, if ever, touch any other plant. When they appear early in the season, there are usually three broods. Dr. Burnett is of opinion that this insect comes from South America, and that the last brood perish entirely, either from cold or starvation, leaving no progeny behind them. Fires in the fields have been recommended as attracting and destroying this moth; white cotton flags, about a yard square, are said to attract it, and to be used as deposits for the eggs; great numbers may be caught by molasses and vinegar spread on plates. But these and similar contrivances will be of little avail until the exact appearance of the first moths is ascertained; then their speedy destruction would prevent the production of the second and third broods, and thus limit, if it did not arrest, their ravages.—Another insect destroying great numbers of cotton buds is the boll-worm moth, belonging to the same tribe of *noctuæ*, and probably to the genus *heliothes*. This is a tawny, yellowish moth, which may be seen toward evening, in summer and autumn, hovering over the cotton blooms, and depositing a single egg in each flower; the egg is hatched in three or four days, and the worm eats its way into the centre of the boll, causing its premature fall; the insect instinctively leaves the boll when it is about to fall, and enters another, and finally attacks the nearly matured bolls, rendering the cotton rotten and useless. The caterpillars have 16 feet, creeping with a gradual motion, unlike the true cotton worm; they vary much in color, some being green, others brown, but all more or less spotted with black, and having a few short hairs. A single moth will lay 500 eggs, and, as three broods are produced in a year, a whole field will be very soon infested with them.—These are the two greatest enemies on the cotton plantations, and the same remedies are effectual against both. In the "Agricultural Report of the Commissioner of Patents" for 1855 is an excellent article by Townend Glover on the insects found on the cotton plant, on the stalk, on the leaf, on the terminal shoots, on the flower, and on the boll, whether injurious, beneficial, or indifferent. Many cotton worms are destroyed by spiders, beetles, and ichneumon flies.

COTYS, or **Cotytto,** a Thracian female divinity, whose festival (the Cotyttia) resembled that of the Phrygian Cybele. It was held at night, and celebrated on hills with licentious revelry.

COUCH, Richard Quillar, an English scientist, born at Polperro, Cornwall, March 14, 1816, died in Penzance, May 8, 1863. He was a surgeon in Penzance, added a third part, on the zoöphytes and calcareous corallines of the Cornish coast, to his father's work on the Cornish fauna, and contributed extensively to periodical publications, relating to physiology and geology. His papers on the diseases and mortality of miners, published by the polytechnic society of Cornwall, have been translated into French.

COUCH GRASS (*triticum repens*, Linn.), a troublesome plant which infests arable lands, and is known by a great variety of names in different localities, such as twitch, witch, quitch, squitch, quack, quake, dog grass, chandler grass, wheat grass. The plant is about 2 ft. high, having rough leaves, somewhat hairy, and trailing at the lower joints, and propagates both by its seed and its jointed roots and stems. Although a grass, it performs the office of a vile weed, being an insidious creeper, multiplying and ramifying itself in all directions. Its scraggy roots go deep into the soil, and take firm hold. Each joint can produce a new plant, which in turn, if not destroyed, will produce others beyond number. Gathering and burning the grass with all its roots is the only effectual remedy against it. A crop of turnips, whose broad leaves exclude sun and air, and the frequent disturbance of the soil in hot, dry weather, are useful in subduing it. Cutting it with the hoe in wet weather only



Couch Grass (Triticum repens).

produces a fresh and larger crop. Cleaning land thoroughly in autumn keeps the roots from penetrating the soil deeply, and from getting a strong hold, almost impossible to be broken. In the early autumn the roots strike horizontally and obliquely, and then go down till the growth of the plant is stopped by the cold of winter. The roots are nutritious, and are sometimes cleaned and fed to pigs, horses, and cattle. In some northern countries they have been used with flour in making bread. The ashes of couch grass contain only about 10 per cent. of potash and 5½ per cent. of lime. Prof. Völcker found a little more than 20 per cent. of bone earth in it. The large amount of soluble silica found in its ashes explains why clay soils, rich in alkaline silicates, are conducive to its growth. In parts of Europe where paring and burning are much practised, it is known that the fouler the land is made by couch grass, the larger is the ensuing crop of turnips.

COUCHING. See CATARACT.

COUCY, De, a noble family of northern France in the middle ages, named from the town and castle of Coucy, near Laon. The historical importance of the family, a branch of that of Vermandois, began at the close of the 11th century. The following are its more celebrated members. **I. Thomas de** (called Thomas de Marle), son of Enguerrand I., count of Amiens, died in 1130. Through his second wife he became lord of the castle of Montaigu, which he fortified and made the scourge of the surrounding country. Besieged by the neighboring nobles and by his own father, he was helped by Prince Louis, afterward Louis VI. (the Fat), the siege being raised in 1105. He afterward laid waste his father's territories with great ferocity. Having incited the cities of Amiens and Laon to revolt, he joined the king and his father against them, and ravaged the communes with unequalled atrocity. In 1116 he succeeded his father in possession of Boves, Coucy, and Amiens. Vanquished by Louis VI., he implored and obtained his pardon, but soon again provoked his anger, was besieged in Coucy, and was mortally wounded in a sortie. **II. Renaud** or **Raoul de,** castellan of Coucy, a minstrel, born about 1160. He went with the crusaders to the Holy Land in 1191, and was killed at Acre. He was the reputed author of 24 songs, remarkable for simplicity and tenderness, which were reprinted in 1830 under the editorship of Francisque Michel. He is the hero of a famous romance of the 13th century, which, under the title of *Roumans dou chastelain de Coucy*, was published in 1829. It is founded upon the following legend, which has been reproduced under various forms: Coucy was in love with a French lady, the wife of the chevalier de Fayel. Fighting in the ranks of the crusaders, he was mortally wounded, and deputed his servant to carry his heart to his mistress. The messenger was surprised by the husband, who caused the heart to be cooked and presented to his wife; she tasted it, but, being informed of the origin of the dish, starved herself to death. **III. Enguerrand III.,** killed by falling from his horse, and being pierced by his own sword, in 1242. He rebuilt the castle of Coucy, distinguished himself at the battle of Bouvines (1214), and was called "the Great." He is famous for his reputed saying, "*Je ne suis roi ne duc, prince ne comte aussi; je suis le sire de Couci,*" which became the motto of his house. One of his daughters married the Scottish king Alexander II. **IV. Enguerrand VII.,** the last and most illustrious of the house, died near Brusa, Asia Minor, in 1397. He was early left an orphan, his father being killed at Crécy in 1346, and was carried by the victorious English to the court of Edward III., who gave him his daughter in marriage. He returned to Coucy in 1368 and restored his ruined estates. In the war that soon broke out between England and France he remained neutral. He fought for the pope in 1373 against the Milanese. In 1375 he asserted a claim to the possessions of the house of Hapsburg, in right of his mother Catharine of Austria, against his uncle, and gathered an army of vagabonds, with the encouragement of Charles V.; but after a campaign of unparalleled barbarity in Alsace, he was defeated by a body of Swiss, and his bandit army annihilated. He was subsequently chosen twice by the king to the delicate task of conciliating the turbulent Parisians. He fought in Flanders in 1382 and 1383, and in a futile invasion of Scotland. In 1390 he went with the duke de Bourbon in the Genoese expedition against Tunis, and in the unsuccessful siege of Afrikeah gained great honor. He was employed on several embassies, and finally was given by the duke of Burgundy a sort of tutelage of his son the count de Nevers, one of the chiefs of the army for the relief of Hungary, then attacked by the Turks under Bajazet. Contrary to the judgment of Enguerrand and the other older commanders, a rash attack was made at Nicopolis, and the allied Christian army utterly defeated (Sept. 28, 1396). Enguerrand was taken prisoner, and died in captivity, his estates passing by sale to the house of Orleans.

COUGH, a violent expiratory movement, excited by some stimulus in the respiratory organs, in which the air is forcibly expelled, carrying with it the mucus or other products accumulated in the air passages. Any irritation from acrid vapors, liquid or solid foreign bodies, too abundant or morbid secretions, or even the action of cold air on the irritated mucous membrane, may produce a cough; the impression is conveyed to the respiratory nervous centre, the medulla oblongata, by the excitor fibres of the par vagum, and the motor impulse is transmitted to the abdominal and other muscles concerned in respiration. Coughing occurs when the source of irritation is in or below the posterior fauces, and sneezing when the irritating cause acts on the nasal mucous membrane. The act of coughing, as defined by

physiologists, consists in a long inspiration which fills the lungs, the closure of the glottis when the expiratory effort commences, and the bursting open of the closed glottis by the sudden blast of air forced up from the air passages. The cause of cough may be in the respiratory system, or it may be symptomatic of disease in the digestive and other organs. The cough in laryngitis, croup, and follicülitis arises from irritation in the throat and larynx; in bronchitis, pneumonia, pleurisy, and phthisis, the cause is in the thoracic cavity. Cough may be dry, as in the first stage of pleurisy, or humid, as in certain stages of pneumonia and in advanced consumption; the act may be single and with distant intervals, or paroxysmal and long continued, as in whooping cough, phthisis, and bronchial catarrh; it may be accompanied by a ringing metallic sound, as in croup and whooping cough, by a hollow resonance or gurgling, as in phthisis with cavities, or by hoarseness, as in laryngeal disease. The character of the cough is characteristic of certain diseases: that of whooping cough and of croup is highly diagnostic; in pleurisy it is dry and hard; in pneumonia, generally humid, with viscid rusty sputa; in consumption it varies with the stage of the affection; but in all these, taken in connection with other symptoms, the cough is a valuable diagnostic sign. Many râles, characteristic of morbid changes, are only or best recognized in the increased respiration after coughing. Cough is frequently accompanied by pain, as in acute pleurisy, pneumonia, and bronchitis; at other times painless, but exhausting, as in the paroxysms of spasmodic coughs. Cough, symptomatic of other than pulmonary disease, is not accompanied by any characteristic phenomena discoverable by auscultation and percussion. The gravity of cough as a symptom depends on the disease in which it occurs; spasmodic coughs generally are not dangerous, except from the liability to rupture of vessels, or other simply mechanical consequences. For the relief of cough the prescriptions are almost innumerable, consisting of compounds of narcotics, antispasmodics, demulcents, expectorants, and alteratives, according to the character of the symptom, the stage of the disease, and the fancy of the attending physician.

COUGUAR (*felis concolor*, Linn.), a carnivorous animal, also called puma, or American lion, and by the early settlers of the United States painter (a corruption of panther) and catamount. It has a very extensive range, being found from northern New York to Patagonia in South America. The length of the body of the adult male is from 4 to 4½ ft., and that of the tail from 2 to 2½ ft.; the females are somewhat smaller. The fur is thick and close, of a pale reddish brown color above, shading into white on the flanks and lower parts; the muzzle, chin, throat, and inside of limbs are grayish white, and the breast is almost pure white; the back of the ears, and the part from which the whiskers spring, are brownish black; the tip of the tail black; the whiskers white; on the face and sides there are sometimes a few stripes. The young have rows of dark brown



Couguar (Felis concolor).

spots on the back, and show other markings like those of the leopard. The couguar is an active climber, but prefers the grassy plains and meadows of South America, where it is very destructive to the herds. One of its chief peculiarities is its voice, which is shrill, and best described as a scream. In the forests of the north it lives chiefly on deer, upon which it springs from a branch overhanging their paths and watering places. It is not satisfied with seizing a single victim, but will kill as many of a herd as it can, sucking only a small portion of the blood of each. It is cowardly by nature, and will flee from man; but if wounded, it will turn upon the hunter, and prove a dangerous foe. In the north it is generally hunted by dogs, and driven to a tree, where it is easily shot. It is readily tamed, and many instances are on record of its docility and even affection.

COULMIERS, Battle of. See Orleans.

COULOMB, Charles Augustin de, a French philosopher, born at Angoulême in June, 1736, died in Paris, Aug. 23, 1806. He began life as a military engineer, serving three years in the West Indies, and afterward in France. Upon the outbreak of the revolution he left the army and devoted himself to the education of his children and to study. He published important treatises upon electricity and magnetism, discovered the non-penetration of electricity into the interior of solid bodies, and invented the torsion balance. His treatises, *Théorie des machines simples* and *Sur la chaleur*, received a prize from the academy.

COUNCIL (Lat. *concilium*, an assembly for deliberation). **I.** In the Christian church, an assembly of bishops, called together by the proper authority for the purpose of determining questions concerning faith, morals, rites, and discipline. Councils are either provincial, national, or general, according as they are com-

posed of the bishops of a province, a nation, or of all Christendom. When the clergy of a single diocese are convened by the bishop for the regulation of the spiritual concerns of his flock, the assemblage is called a diocesan synod. Provincial councils are called and presided over by the metropolitan, who is usually an archbishop. Their principal object is to regulate disciplinary matters in the various dioceses composing the province; their doctrinal decisions have no force unless confirmed by the supreme authority in the church. The general councils of Basel and Trent enjoin that provincial councils shall be held once in three years; but various difficulties in recent times have rendered the execution of these decrees impossible. Moreover, the peculiar relations between church and state in various countries of Christendom have had their influence on the mode of calling councils. In France no metropolitan is allowed to call a provincial council unless by the express sanction of the civil power. National councils, in like manner, where a concordat exists, are called by the concurrent authority of the civil and ecclesiastical powers, and are presided over by the acknowledged primate or by a delegate of the Roman see. These councils were frequent in France under the Merovingian and Carlovingian kings. In 1811 Napoleon called a national council without sanction from the pope. More than 100 bishops assembled at his bidding, and were directed to consider the right claimed by him, as inherent to his sovereign power, of nominating bishops and cardinals. As they were unanimous in their opposition to such pretensions, the assembly was dissolved by the emperor. Among the latest national councils are those of Presburg in 1822, and of Würzburg in 1849. Two plenary or national councils have also been held in Baltimore, the second and most important of which opened Oct. 7, 1866, under the presidency of Archbishop Spalding, delegate apostolic.—General councils, called also œcumenical (Gr. *οἰκουμένη*, the habitable earth), are summoned by the pope. They are composed of all the bishops of Christendom, and are designed to determine questions affecting the universal church. The first eight general councils (not including the apostolic council of Jerusalem) were convoked by the Christian emperors; but this was because the church did not then extend beyond the limits of the Roman empire, and because the first Christian emperors naturally assumed to protect and promote the interests of the church, which their predecessors had persecuted. After the division of the empire, the various Christian sovereigns exercised by custom, conjointly with the ecclesiastical authorities, the right of summoning the bishops of their realms to national councils. But properly the right of convocation resides in the governing power of the church itself. It is admitted on all hands that the bishops alone and their representatives sit in the councils as judges of all matters pertaining to faith and morals. Abbots and generals of religious orders are not so by inherent right. The lower orders of the clergy, as well as the theologians present, enjoy by favor a deliberative or consultative voice. In exceptional cases we find simple priests and even deacons taking an active part in councils, and voting with the fathers; thus St. Athanasius, though only a deacon, had a leading part in the first council of Nice. But such persons were almost always delegated either by the pope or by some bishop. The pope indeed, in person or by legate, presides over the general council. Whenever the Greek emperors presided in early times, they did so not as judges of the faith, but as the political executive, whose right and duty it was to protect the assembly in its discussions. The decision is usually according to the majority of votes cast. In the council of Constance, however, the fathers voted by nations, England, Italy, France, and Germany casting each a separate vote. General councils do not create new dogmas. Their office is limited to deciding, defining, and declaring that any controverted truth is either of Scripture or of tradition. As a general council is the church assembled and deliberating upon matters pertaining to faith, morals, and the spiritual government of Christ's flock, such council is held to be under the guidance of the Holy Spirit; and its doctrinal decisions are therefore held not only final, but infallible. This infallibility, however, is not claimed to extend to questions of mere discipline, history, politics as such, or pure science. The disciplinary decrees are usually termed canons (*canones*), and the doctrinal decisions dogmas (*dogmata*); in the council of Trent, on the contrary, the latter were styled canons, and the former distinguished as *capita* or *decreta*.—The Roman Catholic church recognizes 20 general councils: that of Jerusalem, held by the apostles about A. D. 50; the first of Nice, in 325 (which in histories generally heads the list); the first of Constantinople, in 381; the first of Ephesus, in 431; that of Chalcedon, in 451; the second of Constantinople, in 553; the third of Constantinople, in 680; the second of Nice, in 787; the fourth of Constantinople, in 869; the four Lateran councils, at Rome, in 1123, 1139, 1179, and 1215; the first and second of Lyons, in 1245 and 1274; that of Vienne, in France, in 1311; that of Constance, in 1414; that of Basel, in 1431 (till its dissolution by the pope); that of Trent, in 1545; and that of the Vatican, in Rome, in 1869, which is not yet terminated (1873), though temporarily suspended. The council of Pisa, in 1409, that of Florence, in 1439, and the fifth of Lateran, in 1512, are also regarded by some as œcumenical. The conference of 192 prelates held at Rome in 1854, during which the pope proclaimed the dogma of the immaculate conception, was not a council. The Greek church receives as authoritative the decisions of only the first seven general councils, besides that of Jerusalem. The

Protestant churches generally admit the full authority of none of them, and esteem as œcumenical only the six which directly followed the last named. The synodical assemblies of the Protestant churches, as the councils of La Rochelle and Dort near the period of the reformation, the general synods of the Evangelical church of Germany, and the convocations of the English church at the present time, cannot in their nature be œcumenical.—The most complete collections of the acts of councils are those of Binius (Cologne, 1606 and 1618; Paris, 1636); the same edited by Labbe and Cossart (17 vols., Paris, 1671; supplement by Baluze, 1 vol., 1683); *Collectio Maxima Conciliorum*, by Hardouin (12 vols., Paris, 1715); Coleti (23 vols., Venice, 1728 *et seq.*); Mansi (31 vols., Florence, 1759–'98); and Disch, *Concilienlexikon*, embracing all the councils from the first at Jerusalem (2 vols., Augsburg, 1843–'45). The best collection of the old French councils is that of Sirmond (3 vols., Paris, 1629), with supplements by La Lande (Paris, 1666); of the later French councils, that of Odespun (Paris, 1649); of German councils, that of Schannat, Hartzheim, Scholl, and Neissen (11 vols., Cologne, 1759–'90); of German national, provincial, and diocesan councils, from the 4th century to the council of Trent, that of Binterim (7 vols., Mentz, 1835–'43); and of Spanish councils, that of Aguirre (Madrid, 1781 *et seq.*). (The history of particular councils is given in special articles under the names of the cities in which they were held.) **II.** In political history, the term council is variously applied to either permanent or extraordinary deliberative assemblies. The political affairs of the cantons of Switzerland are intrusted to councils. Certain courts of justice in France were formerly termed councils.—The Council of Ten was the secret tribunal of the republic of Venice, instituted in 1310, after the conspiracy of Tiepolo, and composed originally of 10 councillors in black, to whom were soon added 6 others in red, and the doge. This council was appointed to guard the security of the state, and to anticipate and punish its secret enemies, and was armed with unlimited power over the life and property of the citizens. All its processes were secret. At first established temporarily, it was prolonged from year to year, was declared perpetual in 1335, and maintained its power till the fall of the republic in 1797.—The Council of the Ancients (*conseil des anciens*), in France, was an assembly instituted by the constitution of the year III. (adopted on the first day of the year IV., Sept. 23, 1795), which shared the power with the executive directory, and composed, with the council of five hundred, the legislative body. It had 250 members, either married or widowers, aged at least 40 years, domiciled at least 15 years in France, and one third of whom were to be renewed annually. It sat in the Tuileries, in the former hall of the convention, and had the power to change the residence of the legislative body. It confirmed or rejected, but could not amend, the measures proposed by the council of five hundred. It was overthrown by the revolution of the 18th Brumaire.—The Council of Five Hundred (*conseil des cinq-cents*), instituted at the same time as the council of the ancients, was composed of 500 members, aged at least 25 (and from the year VII. 30) years, domiciled 10 years in France, and one third renewed annually. It sat in the *salle du manége*, in the rue de Rivoli, and proposed laws which were read three times, at intervals of ten days. On the 18th Fructidor, year V., 42 of its members were expelled; but it recovered its power with the revival of the Jacobins, and was violently dissolved by Napoleon on the 19th Brumaire, year VIII. (1799).—The Council of State existed under various names in France from the reign of Philip the Fair. It was composed chiefly of the principal officers of the crown, was dependent upon the will of the king, and followed him in his journeys to advise him on public affairs. The number of councillors of state varied from 15 in 1413 to 30 in 1673. It was limited at the revolution to the king and his ministers, was dissolved in 1792, and was instituted anew in the year VIII., when it was divided into the committees of litigation, the interior, finances, and war. In these committees were elaborated the important laws of the consulate and the empire. This council was modified under the restoration, and under Napoleon III. regained its early importance. (See Regnault's *Histoire du conseil d'état depuis son origine jusqu'à nos jours*, 1851.)—In Spain, the Council of Castile under the old monarchy had the supreme administration of internal affairs; and after the discovery of America, and during the existence of Spain's immense colonial empire, colonial affairs were governed by the Council of the Indies.—In England, the Privy Council was formerly the adviser of the king in all weighty matters of state, a function now discharged by the cabinet. By acts 2, 3, and 4 William IV., a judicial committee of the privy council was constituted with high powers. All appeals from the prize and admiralty courts, and from courts in the plantations abroad, and any other appeals which by former law or usage had been made to the high court of admiralty in England, and to the lords commissioners in prize cases, are directed to be made to the king in council. These appeals are then referred to the judicial committee of the privy council, which reports on them to his majesty. This committee consists of the chief justice of the king's bench, the master of the rolls, the vice chancellor of England, and several other persons, *ex officio;* and any two privy councillors may be added by the king.—In Prussia, by a law established March 20, 1807, the Council of State (*Staatsrath*) consisted of the princes of the royal family who had attained their majority, and of the highest officers of the state

who enjoyed the special confidence of the king. Its decisions had no validity without the royal sanction. By the constitution proclaimed Jan. 31, 1850, and several times afterward modified by royal decree (last on May 17, 1867), the king is assisted in the administration of justice by a council of ministers appointed by royal decree. It now consists of eight ministers: of foreign affairs, of finance, of war, of the interior, of justice, of public instruction and ecclesiastical affairs, of agriculture, and of commerce and public works. In the German empire, by the constitution of April 16, 1871, there is a federal council (*Bundesrath*) representing the individual states, and appointed by the respective governments. It consists of 58 members, of whom 17 are appointed by Prussia, 6 by Bavaria, 4 each by Saxony and Würtemberg, 3 each by Baden and Hesse, 2 each by Mecklenburg-Schwerin and Brunswick, and the remaining 17 by as many of the smaller states.—In some of the United States there are bodies termed councils, which are elected to advise the governor in the executive part of his office, and have power to reject or confirm his nominations to office.

COUNCIL BLUFFS, a city and the capital of Pottawattamie co., Iowa, on the E. bank of the Missouri river, 1,000 m. above St. Louis, and 120 m. W. by S. of Des Moines; pop. in 1860, 2,011; in 1870, 10,020. It has ample railroad communication by means of the Union Pacific, the Chicago and Northwestern, the Chicago, Rock Island, and Pacific, the Burlington and Missouri River, and the Kansas City, St. Joseph, and Council Bluffs lines. It also communicates by horse railroad and ferry with Omaha, Neb., on the opposite bank, 4 m. distant. The bridge connecting the two cities, known as the Missouri river bridge, is 2,750 ft. in length between the abutments, and has 11 spans. It rests on piers, each consisting of two hollow columns of wrought iron, 1¾ inch thick and 8½ ft. in diameter, which are sunk to the bed rock of the river, in one case 82 ft., and filled with concrete and masonry. The bridge, which is 50 ft. above high-water mark, has a railroad track and accommodations for horse cars and ordinary travel. Council Bluffs is situated about 3 m. from the river, at the foot of the bluffs, which are high and precipitous. It embraces an area of 24 sq. m., extending N. and S. 4 m., and E. and W. 6 m. The streets cross each other at right angles, one set running from the river to the bluffs. The city presents a neat appearance. The principal edifices are of brick. The most important public buildings are the county court house, erected in 1867 at a cost of $50,000; the city hall; two public halls; the high school building, which cost $50,000, and has 6 acres of ground attached; and 6 ward school houses, erected at a cost of $60,000. The most important manufactories are the Council Bluffs iron works and machine shops, the agricultural works, a carriage factory, 2 lumber wagon factories, one manufactory each of brooms, candy, and soap, 2 steam flour mills, 3 breweries, a steam bakery, and a manufactory of furniture. There are two national banks, with a capital of $150,000, and a savings bank, with $25,000. Besides the high and ward schools, there is a grammar school, the whole being under the charge of a superintendent and 26 teachers, and having an average attendance of about 2,400 pupils. The Roman Catholics have a seminary for young ladies, with 70 pupils, and a boys' school, with 40 pupils. Two daily newspapers, three weeklies, and a monthly periodical are published. There is a library association, and a young men's Christian association and reading room. The state institute for the deaf and dumb is in the vicinity. There are nine churches, viz.: Methodist (two), Baptist, Congregational, Lutheran, Presbyterian, Roman Catholic, Unitarian, and United Brethren.—The site of Council Bluffs was occupied in 1846 by a Mormon settlement known as Kanesville. The city was incorporated under its present name in 1853. In 1804 Lewis and Clark held there a council with the Indians.

COUNSELLOR. See LAWYER.

COUNT (Fr. *comte;* Ital. *conte;* Span. *conde*), a title of nobility in continental Europe, corresponding with that of earl in Great Britain. It is derived from the Latin *comes*, meaning companion, which under the republic designated young Romans of family accompanying a proconsul or proprætor in order to acquire a practical knowledge of political and military affairs. Under the empire a number of persons belonging to the imperial household or retinue received the title of comes, with some addition designating their function or office. Comites as well as jurisconsulti surrounded the emperor when sitting as judge, to assist him in the hearing of causes, which were thus judged with the same authority as in full senate. This mark of office became a title of dignity under Constantine the Great. As such it was soon conferred not only on persons of the palace, or companions of the prince, but also on most kinds of higher officers. These dignitaries, according to Eusebius, were divided into three classes, called respectively illustrious, most renowned, and most perfect. The senate was composed of the first two. Among the multitude of officers who at this period of the Roman empire were dignified by the title of comes, serving in a civil, legal, or religious capacity, we find comites of the treasury, of sacred expenditures, of the sacred council, of the palace, of the chief physicians, of commerce, of grain, of the domestics, of the horses of the prince or of the stable (*comes stabuli*, the origin of the modern constable), of the houses, of the notaries, of the laws, of the boundaries, marches, or marks (Lat. *margo*, Ger. *Mark*, whence the later margrave and marquis), of the harbor of Rome, of heritages, &c. Most of these titles were imitated, with slight modifications, in the feudal kingdoms which arose on the

ruins of the Roman empire. Thus we can easily trace the origin of the modern grand almoner, grand master of ceremonies, grand master of the royal household, grand equerry, &c., in which the word grand is used as a substitute for the ancient comes. Under the Franks counts appear as governors of cities or districts, next in rank to the dukes, commanding in time of war, and administering justice in time of peace. Charlemagne divided his empire into small districts (*pagi*, Ger. *Gaue*), governed by counts, whose duties are minutely described in the capitularies of the monarch. The Frankish counts had also their deputies or vicars (*missi* or *vicarii*, whence our viscount or *vice-comes*). Under the last of the Carlovingian kings of France the dignity of the counts became hereditary; they even usurped the sovereignty over their districts, and their encroachments remained unchecked even after the accession of Hugh Capet, who was himself the son of the count of Paris; and not for several centuries did their territories become by degrees reunited with the crown. The German term for count, *Graf* (which is variously derived from *grau*, gray or venerable; from γράφειν, to write, whence the mediæval Latin word *graffare*, and the French *greffier;* or from the ancient German *Gefera*, companion, and *Gerefa*, bailiff or steward, whence the English sheriff), first appears in the Salic law in the form of *grafio*. With the development of the feudal system, as well as that of imperial dignitaries in Germany, we find there counts palatine (*comes palatii, palatinus, Pfalzgraf*), presiding over the supreme tribunal; constables (Ger. *Stallgraf*); marshals (from old Ger. *Marah*, horse, and *Schalk*, servant); district counts (*Gaugraf*); counts deputy (*Sendgraf*), controllers of the preceding; margraves (*Markgraf*), intrusted with the defence of the frontiers; landgraves (*Landgraf*), counts of large possessions; burggraves (*Burggraf*), commanders and afterward owners of a fortified town (*Burg*), &c. With the decline of the imperial power most of these titles became hereditary, as well as the estates or territories with which they were connected, the dignity and possessions of the counts ranking next to those of the dukes in the empire. But there were also counts whose title depended solely on their office, as counts of the wood, of the salt, of the water, of mills, &c.—The dignity of count is now merely a hereditary title, mostly attached to the possession of certain estates, and bestowed by the monarch, but including neither sovereignty nor jurisdiction, though connected in some states with the peerage. In England, where the wife of an earl is still termed countess, the dignity of count was attached by William the Conqueror to the provinces or counties of the realm, and given in fee to his nobles. The German term has been adopted by several nations of Europe, as for instance by the Poles (*hrabia*), Russians (*graf*), and Hungarians (*gróf*).

COUNTERPOINT. See Harmony.

COUNTY (Fr. *comté*), in Great Britain and some of the British colonies, and in all the states of the Union except Louisiana, which is still divided into parishes, a political division nearly corresponding to a province of Prussia or a department of France. It is synonymous with shire, with which designation it is often interchanged in England, but never in Ireland. This division in England, though popularly attributed to Alfred, was probably earlier, since several counties, as Kent, Sussex, and Essex, are nearly identical with ancient Saxon kingdoms. There are 52 counties in England and Wales, 33 in Scotland, and 32 in Ireland. The county is an administrative division, and its principal officers are a lord lieutenant, who has command of the militia; a *custos rotulorum*, or keeper of the rolls or archives; a sheriff, a receiver general of taxes, a coroner, justices of the peace, an under-sheriff, and a clerk of the peace. The assize court, county court, and hundred courts are the chief judicial tribunals. There are in England three counties palatine, Chester, Lancaster, and Durham, the earl of each of which had all the *jura regalia*, or rights of sovereignty, in his shire. The first two of these have been long annexed to the crown, and Durham, previously governed by its bishop, was annexed in 1836. In the United States, there are in each county officers who superintend its financial affairs, a county court of inferior jurisdiction, and stated sessions of the supreme court of the state.

COURAYER, Pierre François le, a Roman Catholic ecclesiastic, born at Rouen, Normandy, in 1681, died in England in 1776. He had taken refuge in England (1728) in consequence of a "Defence of English Ordinations," which he had published (1723) as a result of the convictions to which he was brought by a correspondence with Archbishop Wake. The correspondence took place while Courayer was canon of St. Geneviève, and professor of theology and philosophy. The university of Oxford conferred on him the title of doctor of laws, and Queen Caroline settled a pension of £200 on him for a French translation of Fra Paolo's "History of the Council of Trent." He also translated Sleidan's "History of the Reformation," and wrote several theological works. He entertained many religious opinions contrary to the doctrines and practices of the church of Rome, but declared himself two years before his death still a Catholic. He was buried in Westminster abbey.

COURBET, Gustave, a French painter, born in Ornans, June 10, 1819, died in Switzerland, Dec. 31, 1877. Going in 1839 to Paris to study law, he developed a talent for painting. He received some lessons from Steuben and Hesse, but worked chiefly by himself, and studied the works of the Florentine, Venetian, and Flemish masters. For years he met with little favor, his pictures not being admitted into the exhibition; but in 1848 he contributed ten

pictures which had an unexpected success. He undertook to accomplish in painting a movement similar to that which in literature had subordinated the ideal to the real, and pursued realistic art with a degree of exclusiveness which aroused much hostile criticism. In 1855, dissatisfied with the places assigned to his pictures in the universal exposition, he exhibited them in a separate building. In the exhibition at Munich in 1860 he was better appreciated, the jury having assigned a whole room to him. Thenceforth he held a peculiar position in art, standing midway between classicism and conventionalism on the one hand, and romanticism on the other. He took an active part in the movements of the Paris commune in 1871, directed the demolition of the column in the place Vendôme, and was prominent in the most impracticable schemes of the insurgents. When Paris fell he was caught in an attempt to escape and put on trial for treason, murder, and other crimes, but was only sentenced to six months' imprisonment. His pictures sent to the exposition of 1872 were rejected by the jury, on the ground that his conduct during the insurrection had been such as to render him unworthy to associate with men of honor. In 1873 he was prosecuted by the government for damages in the destruction of the column Vendôme, and his effects were seized and sold. Courbet's pictures comprise portraits, landscapes, and genre pieces, and he is specially noted for studies of the nude female form, such as his "Woman with a Parrot."

COURBEVOIE, a village of France, in the department of the Seine, opposite Neuilly, on the railway from Paris to Versailles; pop. in 1866, 9,862. It is built amphitheatrically, has several manufactories and bleaching grounds, and large barracks built by Louis XV. Engagements took place here, April 2–7, 1871, between the troops and the communists.

COURCELLES, a village of Alsace-Lorraine, formerly belonging to France, 4 m. S. E. of Metz. A battle was fought here, Aug. 14, 1870, between the Germans under Steinmetz and the French under Bazaine. Each side lost heavily, the Germans remaining masters of the field. (See METZ.)

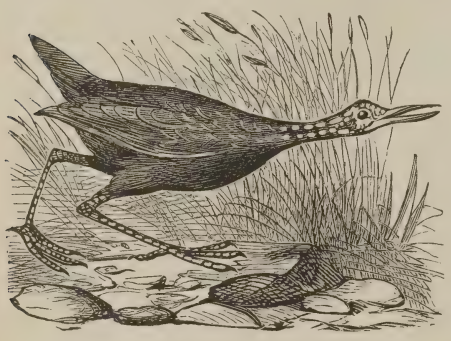
COURCELLES, Daniel de Remi, seigneur de, a French governor of Canada, 1666–'72. He led an expedition on snow shoes against the Mohawks in 1666, and aided Tracy in their reduction. As governor he maintained the ascendancy thus acquired over the Iroquois, and extended the colony, by projecting the fort at Catarocoay (Kingston), built by Frontenac.

COURCELLES, Thomas de, a French theologian, born in 1400, died in Paris, Oct. 23, 1469. He was educated at the university of Paris, of which institution he became one of the brightest ornaments. In 1430 he was chosen rector of the university, and in 1431 was made canon of Amiens, Laon, and Thérouanne. He took a prominent part in the trial and condemnation of Joan of Arc, but was not present at her execution. In the process of her rehabilitation in 1456 he made no excuse for his conduct in this affair. He appeared as a theologian at the council of Basel, and was orator of the university at the council of Mentz, where he defended the liberties of the Gallican church. Charles VII. employed him successfully in several important negotiations, and he pronounced the funeral oration of that king at St. Denis in 1461.

COURIER DE MÉRÉ, Paul Louis, a French scholar and publicist, born in Paris about 1773, murdered near Veretz (Indre-et-Loire), April 10, 1825. He served in the army of Italy, and denounced in his private correspondence the spoliation of works of art by the French soldiery. Returning to France in 1800, he attracted the attention of Hellenists by the publication of his remarks upon Schweighäuser's edition of Athenæus. In 1806 he was again with the army, stationed in dangerous and isolated parts of Calabria, and afterward at Naples and Portici, where he occupied his leisure hours in translating Xenophon's treatise on cavalry. Censured for lingering in Rome and Florence instead of attending to his duties, he threw up his commission, but rejoined the army just before the battle of Wagram, after which, however, he left it entirely. While in Florence he had discovered in the Laurentian library an unedited manuscript of Longus, "Daphnis and Chloe," which he published in Greek and French in 1810. Having in copying the manuscript accidentally blotted it with ink, he was accused of doing so purposely, and ultimately expelled from Tuscany, while the 27 remaining copies of the 52 he had printed were seized by the Tuscan government. After the restoration he denounced the follies of the new administration in numerous pamphlets, which involved him in troubles with the government, and he was arrested several times. His most effective pamphlet, *Pamphlet des pamphlets*, appeared in 1824. In the spring of the following year he was found shot near his country seat. Five years later it was ascertained that he had been murdered by his gamekeeper, who had since died of apoplexy, but no clue was discovered to the motive which prompted him to the deed. Courier's pamphlets are masterpieces of style. They have been published collectively, together with his translations from the Greek and other works, and his life by Armand Carrel (4 vols., Paris, 1834; 1 vol., 1837; 2 vols., 1838). The best edition of his translation of Longus is that of 1825.

COURLAN, a large wading bird, of the genus *aramus* (Vieill.), the only one of its family, which most authors place among the rails (*rallidæ*). The North American courlan, or crying bird (*A. giganteus*, Baird), is 27½ inches long; bill 5¼, much compressed, curved at the tip; head fully feathered; tarsus 5 inches, and tibia half bare; wings broad and rounded, 13 inches long; toes cleft to the base; hind toe long; general color chocolate brown, each feather,

except the quills, streaked centrally with white; chin and upper part of throat whitish. Its flight is short and heavy, from the small concave wings, but it is a very rapid runner even on soft ground. Its note is a kind of cackle. It inhabits Florida and the West Indies. The nest is attached to reeds near the bayous, at a height above all danger from inundation; the eggs are five or six, large for the size of the bird. Its food consists principally of a large green snail which abounds in the everglades of Florida. The flesh of the young is good eating. The



Courlan (Aramus scolopaceus).

South American bird (*A. scolopaceus*, Vieill.) much resembles the former, but is larger, and the white streaks are mostly confined to the head and neck; the latter is the one figured by Audubon.

COURLAND (Ger. *Kurland*), one of the Baltic provinces of Russia, bounded N. by the gulf of Riga and Livonia, E. by the government of Vitepsk, S. by that of Kovno, and W. by the Baltic; area, 10,555 sq. m.; pop. in 1867, 597,288. The face of the country is level, but interspersed with some hills, the highest of which has an elevation of 700 ft. The province contains many forests, especially of pine and fir, and there are said to be no fewer than 300 lakes and ponds. Among the larger rivers are the Düna, Aa, and Windau; and there are many small streams and brooks. The soil is not rich, but when properly tilled is productive. The principal products are wheat, rye, barley, oats, peas, beans, hemp, flax, and linseed. Clay, iron, lime, and gypsum are found, and are wrought to some extent. The manufactures are unimportant. The province is formed of the old duchies of Courland and Semgallia, united with the ancient bishopric of Pilten and the district of Polangen, which once formed part of the duchy of Lithuania. It is divided into six circles. It has two shipping ports, Libau and Windau. Capital, Mitau. The Protestants number 486,815, and their ecclesiastical affairs are conducted by the consistory of Mitau. There are about 18,000 members of the Greek church and 55,335 Roman Catholics, who together possess but 19 churches, and are subject respectively to the bishops of Pskov and Samogitia. There are 35,841 Jews, and many Poles, Russians, and residents of various other nationalities, among whom are the Krevins, a race of Finnish descent. The nobility and the city population, and the higher classes generally, are of German descent, numbering about 77,000, while the peasantry and the lower classes are chiefly of Lettish origin. A provincial diet, composed exclusively of nobles, meets annually at Mitau. —Courland, having been together with Livonia Christianized and for centuries ruled by the knights sword-bearers, became a temporal hereditary duchy under Ketteler, the last grand master, about 1560, as a dependency of the Polish crown. Ketteler introduced the reformation. By the marriage in 1710 of Duke Frederick William with the princess Anna Ivanovna of Russia, the influence of that empire became predominant in Courland. It was strengthened in the following year, when after the duke's death Anna was appointed regent, under the protection of Peter the Great. After Anna's accession to the Russian throne in 1730, her uncle Ferdinand officiated as duke of Courland until his death in 1737. Subsequently the duchy was ruled by Anna's favorite, the adventurer Biron, who died in 1772, and bequeathed it to his eldest son Peter. The latter, failing to give satisfaction to the country, was obliged to cede Courland to Catharine II. in 1795. Since that time it has formed part of Russia, though retaining some ancient privileges.

COURT, in law, an institution having a twofold object, viz.: the conservation of public order by the suppression of violence and crime, and the adjudication of disputes on civil matters between the individuals constituting a community. The first of these is most prominent in a rude state of society, the latter in an advanced stage of civilization. In the earlier and ruder condition, the laws have principal reference to protection from personal violence, and the judicial function is chiefly exercised in rendering speedy justice to the offenders. Another peculiar distinction is also observable in the administration of laws at the different periods above referred to. In the earlier it is vested in the executive, which at that time is usually the sole constituent of the government, and this continues to be the characteristic of every nation whose advance beyond semi-barbarism is arrested, or whenever from a state of partial civilization it returns again to its original rude condition. Such was the primitive administration of laws in the states of Greece; the king or chief of a people was not merely a military leader, but also a judge; and this is now the case in oriental autocracies, with only the modification that where the territorial jurisdiction is large, as in Turkey or Persia, the laws are administered by deputies, but who, in like manner as the sovereign of a small state, each within his respective district, perform the functions of executive and judicial officers. A third circumstance

may be observed, viz.: that in the earlier period a large discretion is exercised in judicial proceedings. The laws being few, cases will occur that are not provided for; and again, personal security being the chief object had in view, summary justice is naturally preferred to the more tardy form of proceeding which would be involved by a regard to the rules of evidence which in a more advanced stage of society are deemed essential; indeed, these rules are an after growth, and require a long experience and an intellectual habit to develop.—The Roman consuls were at first executive and judicial magistrates. The progress of the people in civilization was indicated by their demand of some check upon the arbitrary judgment of the consuls in their judicial capacity, which led to the compilation of the laws of the twelve tables; a still further advance was shown in the separation of the judicial from the consular office, and the appointment of the prætor. But although the Roman mind was eminently legal, it did not during the existence of the republic attain to a clear idea of the importance of a supervisory power for the correction of the errors of inferior tribunals. The assemblies of the people, both the *centuriata* and *tributa*, had indeed a judicial power, but it was exercised in the hearing of cases in the first instance, and those chiefly of persons charged with capital offences. But in civil causes there was not properly an appeal from the judgment of the prætor, or of the judges (or more properly juries) appointed by him. The nearest approach to it was the power exercised by the prætor in certain cases of setting aside the sentence of the *judices* for fraud, and so the assistance of the tribunes was sometimes invoked against the corrupt conduct of the prætor himself. Under the imperial government an appeal was allowed from all inferior judges to the emperor, which was in fact usually heard by a court composed of the chief officers of state and distinguished jurists. Even this court was not, however, strictly subject to the rules which are in modern times deemed essential to an appellate court. It not only decided cases brought before it by appeal from the final judgments of inferior tribunals, but would take original jurisdiction in many cases while they were pending before a subordinate court, and not merely make decisions (*decreta*) in such cases, but also give opinions (*rescripta*) to magistrates or private persons upon questions proposed by them. —In the constitution of judicial tribunals under modern European governments there has been a great advance beyond the Roman in all of the particulars which we have named above as appertaining to the administration of law. The separation of the judicial from executive functions has become gradually recognized as a political principle. In England it was asserted at an early period for the protection of personal freedom against royal power, but it was imperfectly carried into effect until within the last two centuries, when the tenure of judicial office was made independent of the pleasure of the king. The clause of Magna Charta, *Communia placita non sequentur curiam nostram, sed teneantur in aliquo loco*, though seemingly intended for the mere convenience of suitors, by prescribing a certain place for the trial of their causes instead of compelling them to travel about with their witnesses wherever the *aula regis* held by the king in person might be, in reality had the effect of breaking up that court, and ultimately of establishing the several courts of common pleas, king's bench, and exchequer, presided over by justices appointed for that purpose. The king's bench alone, which retained jurisdiction of criminal cases, continued for some time afterward to be migratory, whence the common form of process returnable to that court was *ubicumque fuerimus;* and this prevailed after the court became fixed like the others at Westminster, and its itinerancy was but a mere legal fiction. But the judges of all these courts were appointed by the king, and could be removed by him at will; and this power of removal continued until by statute 13 William III. (1701) it was enacted that the commissions of the judges should be *quamdiu se bene gesserint*, instead of *durante bene placito* as formerly, and that they should be removable only upon an address of both houses of parliament. The chancellor alone, who presides over the department of equity, is subject to removal at the pleasure of the king, and his office is held entirely by a political tenure. The four courts of original and general jurisdiction have been the king's bench, common pleas, exchequer, and chancery. These may be considered the outgrowth of the common law, though, according to a popular mode of expression, chancery is distinguished from the other three, as if not of common law origin, but the equity administered in that court was chiefly indigenous. The ecclesiastical and admiralty courts, on the other hand, derive their mode of administering law from a foreign source, though the limit of their respective jurisdictions is prescribed by acts of parliament, or by long usage, which is supposed to be founded upon statute. The court of king's bench, in the distribution of judicial powers upon the breaking up of the ancient aula regis, retained, as we have mentioned, jurisdiction of criminal cases; but to this was added all that class of cases which, though in reality civil actions between private citizens, yet, as they involved an allegation of force (as in actions for trespass, where the act complained of was alleged to have been done *vi et armis*), were deemed *quasi* criminal. But notwithstanding this narrow limit of its cognizance of civil cases, it remained in one sense the highest court in the realm. It has always been the representative of the king's prerogative, has exercised authority over all other common law courts so far as to restrain them within their proper jurisdiction by writ of prohibition, and has always exercised summary

power, in all cases not otherwise provided for, to compel inferior courts and magistrates to do their duty. By a fiction of law it also acquired jurisdiction of all civil cases except actions relating to real estate, and might even try titles in ejectment; the fiction consisting in an allegation in pleading that the defendant was in custody for a trespass. The court of common pleas had originally exclusive jurisdiction of all purely civil actions, and always retained sole cognizance of actions relating to the realty, except ejectment as above stated. The business of the court of exchequer was originally the collection of debts due the crown, but jurisdiction was obtained of all personal actions by a fiction, viz.: an allegation that the king's debtor had suffered an injury whereby he was less able to pay his debt; whereupon he was allowed to implead in this court the person charged with the wrong. There was a common law and an equity side to the court, but the jurisdiction on the equity side was afterward transferred to the court of chancery. (See CHANCERY.) From all these courts difficult cases were adjourned before judgment to the exchequer chamber, consisting of the judges and barons of the three law courts, the chancellor and lord treasurer; and in some cases an appeal might be taken after judgment to that court. Chancery cases heard before the master of the rolls or a vice chancellor might be appealed to the chancellor (with whom of late have been associated two, and then three lords justices of appeal), and from thence, as well as from the exchequer chamber and the highest courts of Ireland and Scotland, to the house of lords. By the act of August, 1873, the several superior courts of England, including the courts of chancery, admiralty, probate and divorce, and London court of bankruptcy, are consolidated into one supreme court, to consist of two parts or divisions, one the high court of justice, and the other the court of appeal. All the judges of the old courts are made judges of the supreme court, and as vacancies occur in their number appointments are made in their stead, but not until the number is reduced to 21. The high court is divided into sections named after the old courts, but it is to administer justice under simple forms, and without distinguishing between law and equity, giving precedence to equitable principles. The lord chancellor, the two chief justices, the chief baron, and the master of the rolls are to continue to be appointed with the same titles and rank as before. The judges will go as formerly upon the circuit. The court of appeal will be composed of the chancellor, the two chief justices, the chief baron and master of the rolls, with not exceeding nine ordinary judges, who shall at first be the lords justices of appeal in chancery, the three salaried members of the judicial committee of the privy council, and three to be appointed; and it will have the former appellate jurisdiction of the lord chancellor, the court of appeal in chancery, the exchequer chamber, the judicial committee of the privy council in admiralty cases, and of the house of lords in English cases. The trial of all common law causes in the first instance has always been before itinerant or circuit judges, one of whom must be a judge of one of the superior courts of Westminster, which judges are sent annually into every county of the kingdom for the trial of civil and criminal cases which are to be brought before a jury. They were first appointed in the reign of Henry II., and were then called justices in eyre (*justiciarii in itinere*), but afterward designated as justices of assize and nisi prius. Their commission also authorizes them to try all criminal cases, which part of their duties is expressed by the old law phrases of oyer and terminer (to hear and determine), and general jail delivery; the former relating to cases upon which an indictment is found by a grand jury at the same circuit, the latter to indictments previously found upon which there had been an arrest and imprisonment of the parties indicted. The commissions of assize and nisi prius relate to civil causes. Assize in the old English law was the name applied to the trial of issues relating to the freehold, by a species of jury called recognitors, who were allowed to decide upon their own personal knowledge without the examination of witnesses; in modern law the term designates issues in actions relating to real estate. *Nisi prius* is a phrase in the writ issued to the sheriff for the summoning of a jury, by which he is commanded to bring them before the court at Westminster at a certain day in term, unless before that time the justices of assize should come into his county; and as the justices accordingly come, the sheriff returns the writ at the court of assizes.—In France, the administration of justice, which originally belonged to and was exercised by the suzerains or feudal lords in person, was, by a process similar to what took place in England, vested in certain officers appointed for that purpose, who at first were considered as the mere deputies of the suzerain, but were afterward recognized as having independent official functions. One peculiarity prevailed in all the seigniories, viz., that whether the seigneur or his deputy, or the latter judicial magistrate (under the name of *bailli*), presided, it was necessary for the adjudication of any question to call together the principal vassals, who in fact constituted a court, although at first they were spoken of rather as advisers of the seigneur than as judges; but afterward, when the baillies held the courts, they were obliged to submit every case to the judgment of the assembled vassals, who then began to be called peers. These courts decided all questions between the vassals themselves or between vassal and seigneur, except that in the latter class of cases such questions were excluded as involved a contest between the seigneur and the vassals generally, which questions were brought before the suzerain or superior lord of whom the seigneur held. In

other cases, where the seigneur refused to decide, or interfered with the proper administration of right, an appeal was often made to the superior lord; and so also for an unjust judgment, probably, however, only in a case of flagrant violation of right. The former appeal was called *en défaut de droit*, the latter *en faux jugement*. In either case, however, the ground of the appeal was some misconduct of the seigneur or his representative, and not strictly for a review of a case fairly conducted. But instead of such appeal, the vassal who thought himself aggrieved by the judgment of his seigneur could challenge him to combat, first renouncing fealty to him. From these seigneurial courts subsequently grew up the *parlements*. There was at first but one, viz., the court of the king. The first Capetian sovereigns created four grand *bailliages* to hear appeals from all judgments rendered in the courts of the seigneurs, and to judge in the first instance where there was a conflict of jurisdiction; but these tribunals were not uniformly acknowledged, and the vassals still resorted to the court of the king. In consequence of the accumulation of business, and the great expense of attending upon that court at various places, Philip the Fair, by an edict in 1302, made the sitting of the court permanent at Paris. He also established a *parlement* for Languedoc. The *exchiquier* of Normandy was fixed at Rouen permanently by Louis XII., and was entitled by Francis I. a *cour de parlement*. Others were afterward established, and these courts continued to be the appellate tribunals until the revolution. Henry II. established presidences (*présidiaux*) in the principal cities, reserving to the *parlements* only the more considerable causes and inspection of the inferior courts. The *parlements*, which originally consisted of the peers of France, were finally composed of lawyers appointed by the king. They were abolished in 1790, and in their place, so far as respected appellate jurisdiction, was substituted the court of cassation. This court was composed of 52 judges, who, by the *charte constitutionnelle* of 1814, received their appointment from the king, but were not removable. Tribunals of appeal were created a few years after the establishment of the court of cassation (1802), which after the restoration were called *cours royales*, and under Napoleon III. *cours impériales*. The exact limits of the jurisdiction of the latter courts and of the court of cassation are not defined with much precision. The court of cassation, which now consists of 45 counsellors, three vice presidents, and a president, is divided into three chambers, viz.: a chamber of requests, a chamber of civil, and a chamber of criminal cassation. Demands in cassation (applications for reversal of judgment) are first heard by the chamber of requests, which either rejects them or sends them to one of the other chambers. The appeal is directly from the tribunals of first instance, *tribunaux civil d'arrondissement*, which are the same that were established in 1790 under the name of *tribunaux de district*.—This brief review of the courts of the two countries of Europe most celebrated for their jurisprudence, will sufficiently illustrate how far they fulfil the conditions of a sound administration of justice in two particulars, viz.: freedom from excessive control, and a due regard to the correction of errors by a review of the first judgment in an appellate court. There are, however, other important considerations to which we may properly advert. Judges should be independent not only of executive influence, but also of all personal responsibility to litigant parties. There is a singular feature in the French law which indicates either a low state of judicial integrity or an entire oversight of an important principle of jurisprudence. By a proceeding called *prise à partie*, which has been recognized from an early period, a judge is liable to be sued by the party against whom he has rendered judgment. The old rule was, that he could be made responsible only when the judgment was without excuse (*doit être affectée et inexcusable*); by an ordinance of Francis I. (1540) a judge was not liable except for fraud or extortion (*s'il n'y a dol, fraude ou concussion*). Still he was subject to a suit for damages, and several old writers commented strongly upon the peril to society in subjecting judges to such a liability, especially for judgments in criminal proceedings. But notwithstanding these remonstrances, the proceeding has always been and still is allowed. Merlin mentions a number of cases in which the judge would be held responsible, among which are: 1, arresting a person without proper complaint, except in case of flagrant crime (*hors le cas de flagrant délit*); 2, arrest without proof, or for an offence which was not punishable by imprisonment; 3, where the judge has exceeded his power by taking cognizance of a matter without having jurisdiction; 4, evoking a case from an inferior tribunal under pretext of an appeal, and then not disposing of it. The provisions of the code of civil procedure lack precision. The cases of *prise à partie* are: 1, for fraud or extortion, in the language of the ordinance of Francis I.; 2, where it is expressly prescribed by law; 3, where the law has declared judges liable for damages; 4, if the judge has denied justice. (*Code de procédure*, § 505.) The English law, on the contrary, affords ample protection to judges. The rule is, that no private suit will lie against judges of a court of general jurisdiction, either for error of judgment or even for misconduct in their judicial functions; and the same protection is extended to judges of courts of inferior jurisdiction when acting within the limit of their authority. For official corruption, or other criminal conduct, a judge may be impeached and removed from office, and is also liable to be proceeded against by indictment; but no other redress is allowed to a suitor who

may have sustained injury by such misconduct. If, however, a judge having a limited jurisdiction should exceed it, that is to say, should undertake to act in a matter not within his jurisdiction, then he becomes liable to a suit for damages, even if it was a mere mistake of judgment. Thus the court of Marshalsea, which had jurisdiction only of cases in which one of the parties was of the king's household or trespasses committed within the verge of the court, having given judgment for a debt of which they had no cognizance and imprisoned the debtor, the judges and even the ministerial officers were all held liable to damages, the proceedings being *coram non judice* (case of the Marshalsea, 10 Coke's Rep., 68); but in the same case it was said that where a court has jurisdiction of a cause and proceeds erroneously, an action will not lie against the party who sues or against the officer or minister of the court. The rule of exemption as above stated in cases of judges of general jurisdiction has been sustained by the most eminent English judges. (See Groenvelt *v.* Burwell, 1 Salk., 396; Miller *v.* Seare, 2 Bla. Rep., 1141; and Mostyn *v.* Fabrigas, Cowp., 161.) In the case last cited, a governor of Minorca was sued in England for a false imprisonment alleged to have been committed by him while governor. Lord Mansfield said, if it had been done judicially it would have been a complete bar to the action, but as governor he had no such exemption; and he mentioned several cases of naval officers in the British service against whom actions had been brought and damages recovered for acts done by them officially in foreign parts. There was an interesting discussion of this subject in the courts of the state of New York in the case of Yates *v.* Lansing, which was an action against the chancellor, and the English doctrine was fully considered and sustained. (5 Johnson's Rep., 282; 9 id., 375.) In the recent case of Bradley *v.* Fisher, 13 Wallace's Reports, 335, the supreme court of the United States has affirmed the same doctrine. The same exemption from private suit on account of judicial acts which is given to judges is also extended to jurors, who by the English and American law are judges of facts.—Another important requisite for the proper administration of law is certainty in the rules of decision. A discretionary power has been shown by common experience to be unsafe, however specious the idea may be of determining each case upon its own equity. A general rule, known beforehand and rigidly adhered to, is preferable to an oscillating and precarious judgment, although cases of individual hardship will occur in the application of such rules. There will, however, be cases not foreseen or provided for; in respect to these, shall the judges exercise a discretionary power, or should there be a judicatory to take special cognizance of them, or lastly, should legislative action be invoked? The Roman prætors intermingled equitable relief with their judicial decisions. In the English judicial system the court of chancery has had an exclusive but still limited authority to give relief in certain cases upon principles of equity different from the strict rules of law. Yet even in the administration of equity that court soon became bound by its own precedents, from which it was not at liberty to depart, and the chancery law of England is at this day as well settled as the law administered in the other courts. Bacon proposed, in his aphorisms *De Justitia Universali*, that there should be what he calls prætorian courts, having power as well of relieving from the rigor of the law as of supplying the defects of law, that is, prescribing the rule in cases not otherwise provided for. (*De Aug.*, lib. 8, c. iii., aph. 31.) The English courts all decide according to precedents, or if no former decision can be found, then by analogy to what has been decided in similar cases, or upon some general principle which has been recognized; and in cases entirely new they have sometimes sought aid from the Roman law. There is one class of cases, however, in which positive law alone is acted upon, and that is in respect to crimes and their punishment. Crimes must be defined by law, which may be either by statute or by ancient prescription, but courts have no power to declare new crimes; and so in regard to punishment, courts can enforce no other penalty than what has been previously fixed by law. The *parlements* of France were in like manner bound by the *arrêts réglementaires*, rules of decision established in former cases. On the reorganization of the courts in 1790 an attempt was made to abrogate all power of deciding from analogy, or even by a resort to general principles of jurisprudence; and all cases not provided for by express law were to be referred to the national assembly for the purpose of having such law enacted as would be applicable to the particular case. This crude experiment was so unsatisfactory that in the *Code Napoléon* it was thought necessary not only to restore to the courts the power of deciding upon general principles and analogy, but it was even made penal to do otherwise. (*Code Napoléon*, art. 4.)—The courts of the United States have a general correspondence with the English judicial system. The modifications are chiefly these: 1. In the federal courts, as well as the courts of most of the states, the equity powers of the English chancery have been vested in the other courts, though the English system of equity is still substantially administered. Hence our courts may be said to have an equity and a common law side. 2. Local circuit judges have been generally substituted in place of the itinerant or nisi prius judges of England. 3. In most of the states the judges are elected like other public officers by popular vote. Under the federal government the courts consist of the following: 1, the senate as a court of impeachment; 2, the supreme court; 3, the circuit courts; 4, the district courts; 5, the court of claims; 6, the supreme court of the District

of Columbia; 7, the territorial courts. The supreme court consists of a chief justice and eight associate justices, appointed by the president with the consent of the senate, and has original jurisdiction of all suits affecting ambassadors, other public ministers, and consuls, and those to which a state is a party; also appellate jurisdiction over the circuit and territorial courts, and the court of claims, but limited generally to cases involving not less than $1,000 to $3,000 in value; and over the state courts where a question has arisen under the constitution, treaties, or laws of the United States, which the highest court of the state has decided adversely to the validity of any such statute or treaty, or to any authority exercised or asserted under the same or under the constitution, or where a state law or authority has been sustained against an objection that it was repugnant to the constitution, laws, or treaties of the United States. The circuit courts exercise original jurisdiction, concurrently with the state courts, of all civil suits where the matter in dispute exceeds $500, and the United States is plaintiff, or an alien is a party, or where the suit is between a citizen of a state in which the suit is brought and a citizen of another state. They have exclusive jurisdiction of crimes against the United States, except where otherwise specially provided, and concurrent jurisdiction with the district courts of crimes cognizable therein. They may restrain the infringement of patents, and try suits for such infringement; and they have appellate jurisdiction over the district courts where the amount in controversy exceeds $50. There are nine circuits, in each of which is a circuit judge, with whom a justice of the supreme court may sit, and also the district judge for the district; or any one of the three may hold the court alone. The district courts have jurisdiction of such crimes, not capital, as the United States can take cognizance of, and they are also the admiralty and bankruptcy courts. They have also jurisdiction of certain cases of torts where an alien sues, and where the United States or an officer thereof or a foreign consul is a party. The court is held by a district judge. Every state is a district, but some are divided into two or more. The supreme court of the District of Columbia has a jurisdiction corresponding to that of the state courts, and also that of the federal district courts. The court of claims consists of five judges, and has authority to hear and determine all claims against the United States founded upon any law of congress or regulation of the executive department, or upon any contract express or implied with the government, and all claims which may be referred to it by congress; also all set-offs, counter claims, claims for damages, or other demands whatsoever, on the part of the government against any person making claim against the government in that court. The territorial courts possess the powers specially conferred upon them by the acts providing for their creation. Their judges hold office at the will of the president, while other federal judges hold during good behavior.

COURT DE GÉBELIN, Antoine, a French author, born in Nîmes in 1725, died in Paris, May 10, 1784. He was the son of Antoine Court, and early in life officiated for a short time as a Protestant preacher. Subsequently he devoted himself to the study of ancient mythology, in which, as in many other branches of knowledge, he was deeply learned. He established himself in Paris in 1763, and between 1775 and 1784 published his great work entitled *Le monde primitif* (9 vols.), in which he traces the history of the moral and intellectual world. The work was the fruit of 20 years' severe labor, and was to have embraced several additional volumes, the preparation of which was prevented by the author's death. The most valuable part of it, *L'histoire naturelle de la parole*, was republished separately in 1816. He sympathized deeply with the American struggle for independence, and in 1776 coöperated with Franklin and others in the publication of a work advocating the American cause, entitled *Affaires de l'Angleterre et de l'Amérique.* He early established in Paris a bureau for the collection and dissemination of facts and arguments in favor of Protestantism and liberty of conscience; and in later life he became president of a literary business association which involved him in financial ruin. He was the author of a defence of animal magnetism, and of a variety of works, historical, philosophical, and political.

COURTEN. I. William, an English manufacturer and merchant, born in London about 1570, died there in May, 1636. His father had been a tailor at Menin in the Netherlands, and in 1568 fled to London from the persecution of the duke of Alva. He manufactured French hoods, then much in fashion. In 1606 William entered into partnership with his brother Peter, and greatly enlarged the business. They built more than 20 ships, and employed fully 1,000 sailors. Their income reached £150,000, and they lent £200,000 to James I. and Charles I. They were both knighted in 1631. In 1627 William obtained letters patent for a colony on the island of Barbadoes; but this possession was subsequently wrested from him by Lord Carlisle. After this loss, the Dutch murdered his agents at Amboyna, and destroyed all his property there. Engaging in the Chinese trade, the loss of two richly laden ships completed his disasters, reducing him to poverty a short time before his death. **II. William,** last male descendant of the Courten family of merchants, born in London in 1642, died at Kensington Gravelpits in 1702. Educated by his wealthy relatives, he began early to travel and to display a love of natural history. He resided and studied at Montpellier, and when of age returned to England to claim the shattered fortune of his family. After a long lawsuit he changed his name for that of William Charle-

ton, and retired to Montpellier, where he lived for 25 years, enjoying the society of Tournefort and Sir Hans Sloane. He then returned again to England, and took chambers in the Temple, where he lived during the last 14 years of his life. Locke was one of his intimate friends. He made a large collection of coins, precious stones, and various curiosities in medallic and antiquarian history; and his industry is proved by his catalogue, which embraces 46 volumes. His antiquarian collection, which he left to Sir Hans Sloane, now belongs to the British museum.

COURT MARTIAL, a tribunal for the trial of persons in the army or navy charged with military offences. According to article 64 *et seq.* of the congressional act of May 29, 1830, any general officer commanding an army, or colonel commanding a separate department, may appoint a general court martial, except when such officer or colonel shall be the accuser, in which case the court shall be appointed by the president of the United States. A general court martial may consist of any number of commissioned officers from 5 to 13, but shall not be less than 13 when that number can be convened without manifest injury to the service. The commanding officer decides as to the number. Such a court has no jurisdiction over any citizen not employed in military service. The sentence of the court shall not be carried into execution until the whole proceedings have been laid before the officer commanding the troops for the time being. In time of peace no sentence extending to loss of life or the dismission of a commissioned officer, and either in peace or war no sentence against a general officer, shall be carried into execution until confirmed by the president of the United States, to whom, through the secretary of war, the whole proceedings shall be transmitted. Every officer commanding a regiment or corps may appoint a court martial, consisting of three commissioned officers, to judge offences not capital committed in his own regiment or corps. Such a court martial may be appointed also by the officers commanding garrisons, forts, or barracks. But in neither of the cases has it power to try a commissioned officer, or to inflict penalties beyond certain limitations.

COURT OF LOVE (Fr. *cour d'amour*), in mediæval France, a tribunal composed of ladies illustrious for their birth and talent, whose jurisdiction, recognized only by courtesy and opinion, extended over all questions of gallantry. Such courts existed from the 12th to the 14th century, during the age of chivalry. The decisions were made according to a code of 31 articles, which have been preserved in a MS. entitled *De Arte Amatoria et Reprobatione Amoris*, written by André, royal chaplain of France, about 1170. Troubadours were often present to celebrate the proceedings in verse, and the songs of these minstrels were not infrequently reviewed and judged by the tribunals. Among the ladies who presided were the countess de Die, called the Sappho of the middle ages, and Laura de Sade, celebrated by Petrarch. King René of Anjou attempted in vain to revive the courts of love, and the last imitation of them was held at Rueil at the instance of Cardinal Richelieu, to judge a question of gallantry.—See "The Troubadours: their Loves and their Lyrics," by John Rutherford (London, 1873).

COURTOIS, Jacques, or **Cortesi, Jacopo.** See Borgognone.

COURTRAI, or **Courtray** (Flemish, *Kortrijk;* Lat. *Cortoriacum*), a city of Belgium, in the province of West Flanders, on the river Lys, an affluent of the Scheldt, 26 m. S. of Bruges; pop. in 1870, 23,382. It is handsomely built, and contains several good edifices, including a town hall, two fine churches, an exchange, a college, and two orphan asylums. In one of the churches, Notre Dame, is Vandyke's great painting, the "Elevation of the Cross." The inhabitants are actively engaged in the linen manufacture; the fine linens and flax of the neighborhood of Courtrai have a world-wide reputation. There are also large bleaching grounds and manufactories of thread lace and silk lace. Near Courtrai the famous "battle of the spurs" was fought in 1302, so called from the number of spurs collected from the French knights who fell in it. The name of Courtrai frequently occurs in the history of the Netherlands; it was often taken by the French, who finally destroyed its fortifications in 1744.

COUSIN, Jean, a French painter, born at Soucy, near Sens, about 1500, died about 1589. His paintings on glass, many of which exist in churches and palaces, are still highly valued, some having been preserved, as the "Legend of St. Eutopius" and the "Sibyl consulted by Augustus," in the cathedral church of Sens. A large painting on canvas, the "Last Judgment," belongs to the collection of the Louvre. Some sculptures are attributed to him. He is the author of two treatises, *Le livre de la perspective* (Paris, 1560) and *La vraie science de la pourtraicture* (1571). He is reckoned by many as the founder of the French school of painting.

COUSIN, Victor, a French philosopher, born in Paris, Nov. 28, 1792, died at Cannes, Jan. 15, 1867. His father was a clock-maker, a disciple of Jean Jacques Rousseau, and a revolutionist. The first public school that he attended was the lycée Charlemagne, where he gained the highest prizes. Especially interested in rhetoric, the imitative arts, and music, he determined to make literature his vocation, and as a distinguished student his name was in 1811 placed first on the list of pupils admitted into the newly organized normal school. He became assistant Greek professor in this school in 1812, master of the conferences in 1814, held a chair in the lycée Napoléon (soon after called collége Bourbon), and during the hundred days was enrolled in the *élite* corps of royal volunteers. Meantime his attention had

been diverted from belles-lettres to philosophy. The attractive lectures of Laromiguière, one of the society of Auteuil, and the most graceful of the followers of Condillac, first interested him in sensationalism or ideology, the reigning philosophy of the 18th century. The first who openly revolted from the authority of Condillac was Royer-Collard, who developed in France the theories of the Scottish school, and of whom Cousin was the favorite pupil. When at the close of 1815 Royer-Collard was raised to civil office under the restoration, Cousin became his successor as deputy professor of philosophy in the Sorbonne, and for five years he lectured both at the university and the normal school. From the speculations of Maine de Biran concerning the will he derived the germs of his ideas of personality, causality, and liberty; and his earliest courses followed the system of Reid, and were devoted in general to an exposition of ideal truth. He spent the vacations of 1817 and 1818 in Germany, acquainting himself with the literature and thinkers of that country; and the metaphysics of Kant tinged the lectures delivered after his return. In 1821, in consequence of the royalist reaction in the state, his views of free agency were thought to have a political intent, and his course was indefinitely suspended. The next year the normal school was closed by a royal ordinance. The leisure thus afforded he occupied in prosecuting his editions of Proclus (6 vols., Paris, 1820–'27) and Descartes (11 vols., 1826), and his translation of Plato, with summaries, on which he employed, like Raphael, the labor of his pupils subject to his own revision (13 vols., 1825–'40). He also took charge of the education of a son of Marshal Lannes, and in 1824 visited Germany with his pupil. He was arrested at Dresden, on suspicion of being an accomplice of the carbonari, was taken to Berlin, where he suffered a captivity of six months, and was visited in prison by Hegel, whose philosophy was then predominant in Germany. He also became intimately acquainted with Schleiermacher and Schelling. Returning to Paris, he published in 1826 the first series of his *Fragments philosophiques* (followed by a series of *Nouveaux fragments* in 1828), and favored the increasing liberal party. In 1827 the Villèle ministry was supplanted by that of Martignac, and he was restored to the chair of philosophy in the Sorbonne, with Guizot and Villemain for colleagues. The successful triumvirate at once attracted audiences to the university unexampled in numbers and enthusiasm since the time of Abélard. Stenographic reports of their lectures were distributed throughout France. Cousin had already unfurled the banner of eclecticism in the preface to his *Fragments philosophiques*, and he now fully developed the theory that four systems of philosophy have alternately prevailed, each of which is a partial truth, and that the human mind can escape from past error only by uniting the elements of truth contained in each system, so as to form a composite and complete philosophy. He found in the East, in Greece, in mediæval scholasticism, and in all modern speculations, only different phases of sensualism, idealism, skepticism, and mysticism. His forte lay in developing a system from its central principle till it took in the universe in its consequences. His eloquence was at once impetuous and grave, and his style and splendid language recalled the stateliness of the old French classics. The students, accustomed to the calm dissertations of the sensationalists, followed with admiration his adventurous flight. He was the first to unfold to French audiences the speculations and strange technology of the German philosophical development from Kant to Hegel, giving popular expression to theories of the absolute. His lectures derived additional interest from the political temper of the time, a liberal audience gladly discovering political allusions in the words of a liberal professor. At this period Cousin enjoyed his highest reputation. He took no part in the revolution of 1830, but immediately after dedicated a volume of Plato to the memory of one of his pupils who had fallen in the fight. He soon became councillor of state, member of the royal council of public instruction, officer of the legion of honor, titular professor in the Sorbonne, member of the French academy, to succeed Baron Fourier (1830), and of the academy of moral and political sciences at its foundation, director of the reëstablished normal school, and peer of France (1832). He reorganized the system of primary instruction in France, arranged the plan of studies which is still retained in the normal school, and visited Prussia (1833) and Holland (1837) to observe the institutions of public instruction, concerning which he published full and valuable reports, which were translated into English by Mrs. Austin. He urged that national instruction should be associated with religion and founded on the Christian principle, and maintained that education which is not specially religious is likely to be hurtful rather than beneficial, illustrating this view in speeches delivered in the chamber of peers. In 1840 he became minister of public instruction in the cabinet of Thiers, which lasted but eight months. In 1844 he gained his greatest parliamentary distinction by his speech in the chamber of peers in defence of the university and of philosophy. Though surprised by the revolution of 1848, he gave it his aid, and began the series of publications undertaken by the institute at the request of Gen. Cavaignac in behalf of popular morality. He issued an edition of Rousseau's *Profession de foi du vicaire savoyard*, and in short treatises entitled *Philosophie populaire* and *Justice et charité* combated the doctrines of socialism. He had become after 1830 one of the writers for the *Journal des Savants* and the *Revue des Deux Mondes*, in which many of the articles com-

posing his volumes of *Fragments de philosophie ancienne*, *Fragments de philosophie scholastique*, *Fragments de philosophie moderne*, *Fragments littéraires*, and other collections, first appeared. His other chief philosophical publications are, an introduction to the history of philosophy (1828), a history of philosophy in the 18th century (1829), a translation of Tennemann's history of philosophy (1829), a treatise on the metaphysics of Aristotle (1838), lectures on the philosophy of Kant (1842), lectures on moral philosophy delivered between 1816 and 1820 (1840–'41), a work entitled *Du vrai, du beau, et du bien* (1853), and editions of the *Sic et Non* of Abélard (1836), of the works of Maine de Biran (1834-'41), of the *Pensées* of Pascal (1842), of the works of André (1843), and of the works of Abélard (1849). One of the most acceptable fruits of his research is the recovery of the original MS. of the *Pensées sur la religion* of Pascal. The biography of Jacqueline Pascal (1845) is founded chiefly on inedited or unknown documents.—As a philosopher, the plan of Cousin was to publish systems, and from systems to deduce an eclectic philosophy. The reason, in his view, has spontaneous consciousness of absolute truths, and furnishes to the mind ideas of infinite objects which could not be formed by any power of abstraction from observation of particular, finite, and contingent things; to know these ideas is the aim of philosophy, and the reason would be perfectly cognizant of them if it were not misled by the senses, passions, and imagination. There is something true in every system of philosophy, since error can never reach to utter extravagance; this element of truth exists in the reason, and may be found by impartial examination of the consciousness, and of the history of humanity. From the drama of changing systems, which is the history of philosophy, let the truth which constitutes the positive side of every system be taken, exclusive of whatever constitutes its negative and false side; the ideas thus obtained will furnish a spectacle of the universal consciousness, and will be the sum of eclectic philosophy. If the question be raised concerning the authority of the reason, and the certainty that its ideas are universal truths, Cousin, in order to answer, passes from psychology to ontology. Human reason, he says, is not a part of the human personality, but in its nature impersonal, absolute, and infallible, the logos of Pythagoras and Plato, a mediator between God and man; its qualities are those precisely opposed to individuality, namely, universality and necessity; and its spontaneous ideas rightly understood are revelations of a world unknown to man. This theory finds its completion in theodicy. As every phenomenon implies a substance, as our faculties, volitions, and sensations imply a person to whom they belong, so absolute truths have their last foundation in an absolute being, and ideal truth, beauty, and goodness are not mere abstractions, but are the attributes of the infinite Being whom we call God. Cousin was more learned than original. He was alternately under the influence of the Scotch and German schools of philosophy, and did not found any well defined school of his own. His eclecticism does not survive him. Yet he gave to abstruse subjects the charm of his vivid and eloquent style, and will always be remembered as a metaphysician and psychologist. The last 15 years of his life were devoted to histories and biographies illustrating French society in the 17th century. His series of studies on Mme. de Longueville (1853), Mme. de Sablé (1854), Mme. de Chevreuse and Mme. de Hautefort (1856), and that entitled *La société française au XVII^e siècle, d'après le Grand Cyrus de Mlle. de Scudéry* (1858), have the same elevation of thought and sentiment, the same poetical and eloquent style, which mark his discussions and histories of philosophy. His later works are: *Histoire générale de philosophie* (1864), *La jeunesse de Mme. de Longueville* (4th ed., enlarged, 1864), and *La jeunesse de Mazarin* (1865). A complete edition of his works up to that time was published in 1847, in 22 vols. Cousin was economical even to parsimony, and accumulated a considerable fortune. His library, containing 14,000 volumes, especially rich in memorials of the 17th century, was bequeathed to the college of the Sorbonne, with a fund for its preservation. A monument to his memory was erected in the courtyard of the Sorbonne, March 1, 1873. —The principal American editions of Cousin's philosophical writings are the "Introduction to the History of Philosophy," translated by Henning Gottfried Linberg (Boston, 1832); the "Elements of Psychology," from his lectures, by C. S. Henry (Hartford, 1834; last ed., New York, 1856); selections from his works, with introductory and critical notices, in Ripley's "Philosophical Miscellanies" (Boston, 1838); his "Course of Modern Philosophy," by O. W. Wight (New York, 1855); his "Lectures on the True, the Beautiful, and the Good," also by O. W. Wight (New York, 1857); and a portion of the memoirs and studies, under the title of "Secret History of the French Court under Richelieu and Mazarin," by Mary L. Booth (New York, 1858).

COUSIN-MONTAUBAN. See PALIKAO, COUNT DE.

COUSSEMAKER, Charles Edmond Henri de, a French author, born at Bailleul, April 19, 1805. He studied law, held administrative positions at Cambrai, became a judge at Dunkirk, and subsequently removed to Lille, where he devoted himself to archæology and its relations to music. His residence being near the Belgian frontier, he became a member of the learned societies of that country, chairman of the committee on the study of the Flemish language, and correspondent of the ministry of the interior on historical matters. Among his works are: *Histoire de l'harmonie au moyen âge* (1852); *Chants populaires des Flamands de France* (Ghent, 1856); *Drames liturgiques au moyen*

âge (Rennes, 1860); *Les harmonistes des XII^e^ et XIII^e^ siècles* (Lille, 1864); *Traités inédits sur la musique au moyen âge* (1865); and *Scriptorum de Musica Medii Ævi nova Series* (1865–'7).

COUSTOU, the name of three French sculptors. **I. Nicolas,** born in 1658, died in 1733. His works were exceedingly numerous, and furnished material for a volume by his biographer, Cousin de Contamine. The most important of them are a group representing the descent from the cross, in the church of Notre Dame at Paris, and two colossal statues representing the junction of the Seine and the Marne, in the garden of the Tuileries. **II. Guillaume,** brother of the preceding, born in 1678, died in 1746. He was distinguished for independence and vigor of style. Among his best works are groups representing the Ocean and the Mediterranean, in the garden of Marly, a colossal statue of the Rhône, at Lyons, and several mythological statues. **III. Guillaume,** son of the preceding, born in 1716, died in 1777. His fame rests upon the statues of Mars and Venus, executed for Frederick the Great.

COUTANCES (anc. *Constantia Castra*), a town of France, in the department of La Manche, 6 m. E. of the sea and 35 m. S. of Cherbourg; pop. in 1866, 8,159. It is the seat of a bishop, and contains an old Gothic cathedral with two spires in front and a large square tower surmounting the centre of the cross, a communal college, a public library with 5,000 volumes, and a small theatre. There are manufactories of cutlery and druggets, and a brisk trade is carried on in corn, butter, poultry, flax, hemp, and horses. Near it are the remains of an ancient Roman aqueduct.

COUTHON, Georges, a French revolutionist, born near Clermont in 1756, died by the guillotine, July 28, 1794. He was a lawyer previous to the revolution, and was noted for amiability and probity, giving gratuitous advice to the poor and devoting himself to charitable works. At the opening of the revolution his popularity was enhanced by his manifestation of liberal opinions, and he was elected a municipal officer in Clermont and afterward president of the tribunal of that city. In 1791, although he had nearly lost the use of his limbs from paralysis brought on by exposure, he was elected a deputy to the legislative assembly. He became at once one of the most revolutionary of the members, allied himself with the Jacobins, and advocated the strongest measures against the king. The following year he was elected to the convention, and voted for the death of the king. He became a strong partisan of Robespierre, and formed with him and St. Just the triumvirate which for a short time controlled the government. He moved the resolution which decreed the arrest of the Girondists, and acted as commissioner in Lyons, where his name is connected with many atrocities, though according to some he endeavored to restrain the excesses of his party on that occasion. On his return to Paris he actively seconded Robespierre in all his projects, and presented to the convention the law of the 22d Prairial, which deprived the accused brought before the revolutionary tribunal of the aid of counsel and of the right to produce witnesses in their defence. He was involved in the fall of Robespierre on the 9th Thermidor, and shared his fate.

COUTTS. See BURDETT-COUTTS.

COUTURE, Thomas, a French painter, born in Senlis, Dec. 21, 1815. He was successively a pupil of Gros and Delaroche, but developed about the age of 25 a style very different from theirs, and distinguished by rich coloring and singular freedom of handling. His first work conspicuous for these qualities was "The Love of Gold," exhibited in 1844; and in 1847 he rose suddenly to great reputation by the production of his "Romans of the Decadence," a large picture suggested by a distich of Juvenal, and which gained him a medal of the first class and the cross of the legion of honor. He has never surpassed this effort. His subsequent works have been produced at irregular intervals, and comprise "The Falconer," "Enrollment of Volunteers," "Return of Troops from the Crimea," and "Baptism of the Prince Imperial," the two latter being commissions from Napoleon III. He has also decorated the chapel of the Virgin at St. Eustache. Couture has educated many pupils, and exercises a considerable influence over contemporary art. In 1867 he published an essay on art entitled *Entretiens d'atelier*, which attracted much attention among artists and literary men.

COVENANTERS. See CAMERONIANS.

COVENTRY, a city and municipal and parliamentary borough of Warwickshire, England, on the Sherbourne, 10 m. N. N. E. of Warwick, and 94 m. by railway N. N. W. of London; pop. in 1871, 39,470. With some adjacent villages it was formed into a separate county by Henry VI., but an act of parliament in 1842 united it with Warwickshire. Its name, a corruption of *Conventre*, or "convent town," came from a Benedictine priory founded in 1044 by Leofric, lord of Mercia, and his lady Godiva, of which the cellar, 225 ft. long by 15 ft. wide, still exists. The ancient part of the city has narrow, ill-paved, and crooked streets, built up with antiquated houses; the modern part is well laid out, filled with handsome dwellings, and supplied with gas and water. There are three ancient and three modern churches, and several chapels. Among the educational establishments is a free school, founded in the time of Henry VIII. by John Hales, having an income of £950 per annum, two fellowships at Oxford, one at Cambridge, and six exhibitions at either university. There are six endowed and various private schools, a government school of design, mechanics' institute, two libraries, a convent of the sisters of charity, hospital, dispensary, savings bank, theatre, county hall, drapers' hall, barracks,

and a great number of charitable foundations. St. Mary's hall, a venerable building of the 15th century, with a principal room 63 ft. long, 30 ft. wide, and 34 ft. high, has a curiously carved roof, and a large painted window. It was built for the Trinity guild, but is now used for public celebrations, meetings, &c. The manufactures of Coventry were early celebrated. At the commencement of the 15th century an active trade was carried on here in woollen cloths, caps, and bonnets, and there were flourishing manufactures of caps, woollens, and broadcloth. Afterward blue thread, called "Coventry true blue," and still later tammies, camlets, shalloons, and callimancoes, were staple manufactures; but the articles now most largely made are silks, ribbons, fringes, and especially watches, the last more extensively than even in London. The city is connected with the grand trunk navigation by the Coventry and Oxford canal, and with the chief emporiums of the kingdom by the Great Northwestern and two branch railways. Coventry was anciently defended by walls and towers, but only a small portion of the former and three of the latter remain; the rest were destroyed by Charles II. on account of the favor shown by the citizens to the parliamentarians.—Twelve parliaments have been held here, the most noted of which are one in 1404, called the *parliamentum indoctum*, because lawyers were excluded from it, and one in 1459, called the *parliamentum diabolicum*, from its numerous acts of attainder. The people were noted for their love of all kinds of shows, pageants, and processions, descriptions of which have furnished matter for several curious and interesting works. The religious dramas called mysteries were performed here with peculiar magnificence as early as 1416, and often in the presence of royalty. Until within the present century an annual pageant was kept up in memory of the lady Godiva, but it is now only occasionally celebrated. She is said to have obtained from her husband Leofric the remission of certain heavy imposts of which the citizens complained, on condition that she should ride naked through the streets of Coventry at noonday. She ordered the people to keep within doors and close their shutters, and, veiled only by her long flowing hair, she mounted her palfrey and rode through the town, unseen except by an inquisitive tailor, immortalized under the sobriquet of "peeping Tom," whose curiosity was punished by instant blindness. This story, on which Tennyson has founded a poem, was first recorded by Matthew of Westminster, who wrote in 1307, 250 years after its supposed occurrence. On the occasion of the pageant's taking place, a very lightly clad female is still the leading character. Efforts have been made to suppress this exhibition, but with only partial success.—The phrase "sending to Coventry" is supposed to have originated with military men, from whom the inhabitants held themselves aloof.



St. Michael's Church, Coventry.

COVENTRY, a town of Kent county, Rhode Island, on a branch of the Pawtuxet river, and the Hartford, Providence, and Fishkill railroad, 12 m. S. W. of Providence; pop. in 1870, 4,349. It is noted for its manufactories of mousseline-de-laines, calico prints, coarse cotton goods, and cotton and other machinery.

COVERDALE, Miles, an English divine, born in Yorkshire in 1487, died in February, 1568. He was educated in the house of the Augustine friars at Cambridge, ordained a priest in 1514, and was among the first at Cambridge to renounce allegiance to the church of Rome. Finding continued residence in England unsafe, he went abroad, and assisted Tyndale in his translation of the Bible. In 1535 he published a translation of his own, with a dedication to King Henry VIII. This was the earliest English translation of the whole Bible. No perfect copy of this edition is now known to exist, but the version of the Psalms is that still used in the "Book of Common Prayer" of the Episcopal church. In 1538 he went to Paris to superintend the publication of a new edition; but before the completion of the undertaking it was denounced by the inquisition, and the 2,500 copies already finished were condemned to the flames. A few copies, however, were sold as waste paper, and so preserved. These, with presses, types, and printers, were shortly after transported to England, and used in

printing the "Great Bible" of Cranmer. Coverdale held the office of almoner to Queen Catharine Parr, and officiated at her funeral in 1548. In 1551, when appointed to the bishopric of Exeter, the customary payment of first fruits was remitted to him, at the solicitation of Cranmer, on account of his poverty. On the accession of Queen Mary Coverdale was deposed and imprisoned. He was released after two years at the request of the king of Denmark, whose chaplain had married the sister of Coverdale's wife, but only on condition of banishment. He found an asylum first in Denmark, and afterward in Geneva, where he assisted in the English translation known as the "Genevan Bible." He returned to England on the accession of Elizabeth, but was not restored to the see of Exeter. In 1563 he was recommended to the bishopric of Llandaff, but declined, and took the rectory of St. Magnus, London bridge. This he resigned in 1566. His last days were spent in translating the writings of the continental reformers, and publishing original tracts in support of the principles of the reformation. He was buried in the church of St. Bartholomew, London, Feb. 19, 1568. On Oct. 4, 1835, was celebrated the third centenary of the publication of his Bible.

COVILHAM, or **Covilhão, João Peres da,** a Portuguese navigator, born at Covilhão about the middle of the 15th century, died in Abyssinia toward the middle of the 16th. He passed part of his early life in the Castilian service, and afterward became a man-at-arms in the household of Alfonso V. and John II. of Portugal, participating in several campaigns. He was employed in a mission to the Barbary states, where he acquired a knowledge of the Arabic language, which qualified him for a more important expedition to Abyssinia, said to have been destined for the discovery of the kingdom of the mysterious Prester John, and also for commercial purposes. With Affonso de Paiva he left Lisbon May 7, 1487, reaching Abyssinia by the way of Cairo and Aden. After the death of his companion he visited the principal towns of the coast of Malabar, and returned to Abyssinia in 1490, presented to the ruler the letters addressed by John II. to the legendary Prester John, and was detained at his court, marrying a wealthy Abyssinian woman, and leading a life of ease, though regretting his involuntary exile. The principal result of his explorations was its paving the way for Vasco da Gama's discovery of the route to India round the cape of Good Hope, the itinerary of Covilham being of considerable use to Da Gama. The fullest information about him is contained in the *Verdadeira informação do Preste-João das Indias*, &c., by Francisco Alvarez, chaplain of the Portuguese embassy who visited Covilham in Abyssinia (Lisbon, 1540).

COVILHÃO, a town of Portugal, in the province of Beira, situated on the E. slope of the Sierra de la Estrella, 20 m. S. W. of Guarda; pop. about 9,000. It has an antique castle, nine churches, a hospital, a workhouse, and a manufactory of cloths, druggets, and baizes.

COVINGTON. I. A S. county of Alabama, bordering on Florida, drained by Conecuh and Yellowwater rivers; former area, 1,240 sq. m., but a portion has recently been taken to form Crenshaw county; pop. in 1870, 4,868, of whom 599 were colored. The surface is uneven, and mostly occupied by pine forests, the lumber obtained from which is the principal article of export. The soil is sandy and poor. The chief productions in 1870 were 63,389 bushels of Indian corn, 16,264 of sweet potatoes, 689 bales of cotton, and 9,646 gallons of molasses. There were 462 horses, 1,796 milch cows, 3,900 other cattle, 4,250 sheep, and 7,077 swine. Capital, Andalusia. **II.** A S. county of Mississippi, drained by affluents of Leaf river; area, 680 sq. m.; pop. in 1870, 4,753, of whom 1,647 were colored. Pine timber occupies portions of the surface, but it is not abundant. The soil is light and sandy. The chief productions in 1870 were 109,813 bushels of Indian corn, 28,042 of sweet potatoes, and 1,605 bales of cotton. There were 965 horses, 1,979 milch cows, 3,683 other cattle, 3,766 sheep, and 8,965 swine. Capital, Williamsburg.

COVINGTON, a city and one of the seats of justice of Kenton co., Kentucky, situated on the Ohio river, opposite Cincinnati, and immediately below the mouth of the Licking, which separates it from Newport. Its growth since 1830, when it contained 715 inhabitants, has been rapid. In 1840 the population was 2,026; in 1850, 9,408; 1860, 16,471; 1870, 24,505, of whom 1,104 were colored, and 7,052 foreign. The wire suspension bridge over the Ohio to Cincinnati, completed in 1867 at a cost of nearly $2,000,000, is supported by two towers, each 200 ft. high, between which the span measures 1,057 ft.; the entire length of the bridge is 2,252 ft., and its height above low water 100 ft. There is also a wire suspension bridge over the Licking to Newport, built in 1854. The Kentucky Central railroad, 112 m. long, to Lexington and Nicholasville, is the only one now entering the city. The Louisville short-line railroad, of which Covington was formerly the terminus, passes in the rear of the city over the Licking to Newport, and thence across the railroad bridge to Cincinnati. The citizens have recently voted $500,000 toward erecting a railroad bridge to the latter city, over which the projected Cincinnati Southern railroad (350 m. long, to Chattanooga, Tenn.) is to cross the Ohio. Horse cars also run to Cincinnati. The city is built upon a beautiful plain several miles in extent, and includes within its corporate limits over 1,350 acres. The principal streets running from the river appear as a continuation of those of Cincinnati, which Covington greatly resembles in its general plan, and of which it may be regarded as a suburb. The combined court house and city hall is a

large and handsome edifice. There are four public school buildings, a high school building in course of erection, and an odd fellows' hall. In February, 1873, congress appropriated $130,000 for a post office and United States court building, which will be speedily constructed. There are 560 stores and shops, 8 large tobacco factories, 21 cigar factories, 2 rolling mills producing sheet, bar, and railroad iron, and a third in course of construction, 4 distilleries, 5 breweries, glass works, manufactories of hemp and silk, and several beef- and pork-packing establishments. Many of the inhabitants do business in Cincinnati, 12,000 persons passing over the bridge daily. There are four banks, with an aggregate capital of $1,750,000. The city is divided into nine wards, and is governed by a mayor and a common council of two members from each ward. It is supplied with water by works on the Holly system, erected in 1871 at a cost of $430,000. The taxable property in 1845 amounted to $1,065,245, in 1860 to $6,843,287, and in 1872 to $11,467,325. The public schools consist of 1 high school, 12 grammar and 31 primary schools, which in 1871 had 4 male and 43 female teachers, and an average attendance of 2,054. The city levies a tax of 2½ mills on the dollar, in addition to the state tax of 2 mills, for school purposes. There are also 10 Roman Catholic schools and academies. The public library contains about 5,000 volumes. A weekly newspaper and a monthly periodical are published. The hospital of St. Elizabeth occupies a commodious building, with ample grounds adorned with shrubbery, in the centre of the city, and has a foundling asylum connected with it. The German orphan asylum is about 4 m. from Covington. These institutions are under the charge of the Catholic church. St. Joseph's priory of the Benedictine order is in Bush street, and St. Walburga's convent of Benedictine nuns in Twelfth street. The churches, 25 in number, are as follows: 3 Baptist, 1 Disciples', 1 Episcopal, 2 Evangelical Reformed, 1 Lutheran, 6 Methodist, 2 Presbyterian, 8 Roman Catholic, and 1 Welsh. The Evangelical, the Lutheran, one of the Methodist, and four of the Catholic churches are German. Two churches, a Baptist and a Methodist, are for colored people. Covington was laid out under an act of February, 1815, and was incorporated as a city in 1834.

COW. See CATTLE.

COW BIRD, or **Cow Bunting,** a bird of the genus *molothrus* (*M. pecoris*, Swains.). In the genus the bill is short and stout, elevated at the base, and advancing on the forehead; wings long and pointed, first and second quills the longest; tail moderate and nearly even. Of the few species, the above is the only one found in the United States; it is about 8 inches long and 12 in alar extent; in the male the prevailing color is shining black, with a purplish and steel-blue gloss; the head, neck, and anterior part of breast, light chocolate brown; the female is light olivaceous brown; bill and feet black. It is found throughout the United States from the Atlantic to California, though probably not on the Pacific coast; it frequents fields and farmyards, following cattle, sometimes picking ticks from their backs, and at others feeding on the seeds, worms, and insects contained in their dung; large flocks migrate to the north in spring to breed, returning in autumn. The females have the habit of dropping their eggs, generally singly, into the nests of other smaller birds, as sparrows, warblers, and flycatchers; in New England the summer yellow bird's nest is most frequently selected. The eggs thus stealthily dropped are of about the same size as the true ones, and are more quickly hatched by the foster parents; of course, with this habit the cow birds do not pair, nor display the lasting attachment of ordinary birds. The European cuckoo has the same habit of abandoning her progeny to the care of strangers; but this is the more remarkable in the cow bird, as belonging to a family proverbial for the ingenuity with which their nests are constructed. If the cow bird's egg



Cow Bird (Molothrus pecoris).

be deposited in a newly finished but empty nest, the makers generally abandon it; if in a nest already containing eggs, it is usually allowed to remain, though the makers are probably often aware of the intrusion. The yellow bird has a way of disposing of the strange egg which will be noticed under that title. The egg is pale grayish blue, with amber-brown dots and streaks, and the young is hatched in about a fortnight, the other eggs remaining unhatched; the intruder is fed by the foster parents, to the neglect of their own eggs, which, when the contained embryo has perished, are cast from the nest; and it is cared for long after it has left the nest. This species has no song, but a low muttering chuckle. The flesh is esteemed as food, and many are shot for this purpose in the southern states. They roost among the reeds in swampy places, and feed in immense flocks, often in company with the red-winged blackbird and other troopials.

COWELL, John, an English civilian, born at Ernsborough, Devonshire, in 1554, died in Cambridge, Oct. 11, 1611. He was educated at

the university of Cambridge, where he subsequently became fellow, professor of civil law, and master of Trinity hall. In 1607 he compiled a law dictionary, styled "The Interpreter;" and for the opinions expressed in this work, maintaining that a British monarch might make laws without the consent of parliament, he was prosecuted before the house of commons by Sir Edward Coke, and saved from imprisonment by the interposition of James I. Besides the above named work, Cowell wrote "Institutes of the Laws of England."

COWES, a seaport town and watering place of the Isle of Wight, Hampshire, England, situated at the mouth of the river Medina, which



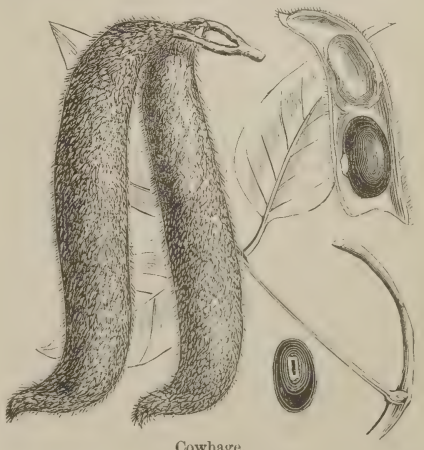
Cowes.

flows into the Solent channel nearly opposite the estuary called Southampton water, 11 m. S. S. E. of Southampton; pop. in 1871, 11,126. It is built on both banks of the river, the two parts being distinguished as East and West Cowes. It has a number of good hotels and lodging houses for summer visitors, a botanical garden, custom house, assembly room, town hall, mechanics' institute, and seven places of worship. The parish church of Northwood is an ancient edifice, with a handsome tower and spire built in 1864. The castle stands at the N. extremity of the parade, and is used by the royal yacht squadron as their club house. The streets are steep, narrow, and in many quarters disfigured by old and wretched dwellings. Its beautiful scenery, good situation, and facilities for sea bathing at a fine beach very near the town, render it one of the most popular bathing places in England. The harbor is excellent, and there is constant steam communication with Portsmouth, Southampton, &c. A brisk trade is carried on in provisions and other marine stores; wheat, flour, malt, barley, wool, and salt are largely exported to France, Spain, Portugal, and the Mediterranean. In 1864 a public walk, about 1,100 ft. long, was laid out along the shore, and from 1866 to 1868 a pier for steamers 310 ft. long was built. Osborne house, the marine villa of Queen Victoria, is in the vicinity.

COWETA, a N. W. county of Georgia, bounded N. W. by the Chattahoochee, and E. by Line creek; area, 378 sq. m.; pop. in 1870, 15,875, of whom 8,019 were colored. It has an uneven surface and a fertile soil, most of which consists of a sandy loam. Oak, hickory, and pine are the principal timber. A gold mine was formerly worked here. The Atlanta and West Point, and the Savannah, Griffin, and North Alabama railroads traverse it. The chief productions in 1870 were 37,131 bushels of wheat, 224,070 of Indian corn, 26,586 of oats, 19,828 of sweet potatoes, 64,933 lbs. of butter, and 9,793 bales of cotton. There were 861 horses, 1,477 mules and asses, 2,025 milch cows, 3,245 other cattle, 2,546 sheep, and 8,153 swine; 3 saw mills, 1 cotton and 1 car factory. Capital, Newnan.

COWETAS. See CREEKS.

COWHAGE, or **Cowitch** (*mucuna pruriens;* called also *dolichos, stizolobium,* and *negretia pruriens*), a perennial climbing leguminous plant, which grows in the West Indies and other parts of tropical America. Its pod is imported for the sake of its stiff bristly hairs, which are used in medicine. They are sharp, penetrating spiculæ, which produce an intense itching



Cowhage.

sensation when handled. In the West Indies they were long since found to possess valuable

qualities as a vermifuge, probably by penetrating and thus destroying the worms. They were consequently adopted in medical practice, and introduced into the pharmacopœias, but are now little used. The medicine is prepared by dipping the pods in molasses and scraping the hairs into this, until a mixture is obtained as thick as honey. Cowhage has also been applied as an external irritant by making it into an ointment with lard.

COWL (Sax. *cuhle;* Lat. *cucullus*), a sort of hood, originally worn by all classes, and still retained by certain orders of monks. It consists of a conical covering for the head, attached to the robe or cloak, and sometimes made to draw over the shoulders also. According to Mabillon, it was at first the same as the scapular. The Benedictines and Bernardines have two sorts, one black for ordinary occasions, and another white and very large for days of ceremony. The proper shape of the cowl has been in the Franciscan order the subject of long and bitter dissensions.

COWLEY, a S. E. county of Kansas, bordering on the Indian territory, intersected by the Arkansas river, and watered by Rock, Grouse, and Suicide creeks; area, 804 sq. m.; pop. in 1870, 1,175. The chief productions in 1870 were 8,580 bushels of wheat, 2,380 of rye, 38,720 of Indian corn, 10,200 of oats, 3,400 of potatoes, 1,786 tons of hay, and 5,686 lbs. of wool. There were 791 horses, 819 milch cows, 1,099 other cattle, 1,130 sheep, and 234 swine. Capital, Winfield.

COWLEY, Abraham, an English poet, born in London in 1618, died at Chertsey, Surrey, July 28, 1667. His father died before his birth, and by the solicitation of his mother he was admitted into Westminster school. Spenser's "Faerie Queen" first turned his attention to poetry. A volume of his poems was published when he was 15 years old, including some of his compositions written at the age of 10. While he was yet at school he produced a comedy entitled "Love's Riddle," written in the pastoral strain. In 1636 he entered Cambridge university, and two years afterward published his "Love's Riddle," with *Naufragium Joculare*, a comedy in Latin prose, now totally forgotten. He was ejected from Cambridge in 1643 after he had taken his degree of A. M., on account of his political opinions and independence, and went to Oxford. He was a devoted partisan of Charles I., and when Oxford was taken possession of by the parliament followed the queen to Paris (1646), and there became secretary to Lord Jermyn, afterward the earl of St. Albans, and frequently wrote and deciphered the secret letters that passed between the king and queen. He was absent from England in all more than ten years, and during that time he undertook some very perilous journeys to Jersey, Scotland, Flanders, Holland, and other countries. In 1656 he repaired secretly to England, but was arrested and only set at liberty on his giving bail in £1,000 for his future behavior. In that year he published his poems, and in his preface inserted a passage suppressed in subsequent editions, which was thought to intimate a change in his loyalist feelings; and he also speaks of his desire to "retire to the American plantations and forsake this world for ever." He was made a doctor of medicine at Oxford in 1657, but there is no reason to suppose that he ever practised. He considered a knowledge of botany indispensable to the medical profession, and retiring to Kent busied himself with gathering plants. He also wrote a Latin poem on plants in six books. On the death of Cromwell he returned to France, where he remained in his former station until the restoration of the Stuarts. He then looked for some substantial reward for his services in the royal cause, but received nothing. He had been promised by Charles I., as well as by his son, the mastership of the Savoy, "but lost it by certain persons enemies to the muses." It is said that in revenge he altered a comedy, "The Guardian," and brought it out anew under the title of "Cutter of Coleman Street." It was harshly treated on the stage, and regarded as a satire on the royal party. He took the failure of his play considerably to heart, but denied that it was intended as a reflection on the royalists. He now left London, and secluded himself first at Barn Elms, a suburban village, and afterward at Chertsey in Surrey (1665). In his retreat he was at first but slenderly provided for, but by the influence of the earl of St. Albans he obtained such a lease of the queen's lands as secured him a tolerable income until his death two years after. Although very highly esteemed as an author by Johnson, and by Milton even ranked with Shakespeare and Spenser, there is probably no English poet of equal pretensions less read at the present day. His "Essays" have great merit as agreeable specimens of prose composition. He was buried near Chaucer and Spenser in Westminster abbey, where in 1675 the duke of Buckingham erected a monument to his memory.—An edition of his "Works," with his "Life" by Bishop Sprat, was published in 1688 (folio), and his "Select Works," edited by Bishop Hurd, in 1772–'7 (3 vols. 8vo).

COWLITZ, a S. W. county of Washington territory, separated on the S. W. from Oregon by the Columbia river, and intersected by the Catama and Minter rivers, and the Cowlitz and its tributaries; area, 460 sq. m.; pop. in 1870, 730. The W. part is mountainous; the soil is fertile. The chief productions in 1870 were 12,933 bushels of oats, 4,411 of peas and beans, 6,095 of potatoes, 1,425 tons of hay, and 14,075 lbs. of butter. Value of live stock, $45,499. Capital, Freeport.

COWPENS, a post village in Spartanburg co., S. C., near the border of North Carolina, near which the British under Col. Tarleton were defeated, Jan. 17, 1781, by the Americans under Gen. Morgan. In the latter part of December, 1780, Morgan occupied the country

between the Broad and Pacolet rivers, and Cornwallis despatched Tarleton with 1,100 choice troops, with two pieces of artillery, to force Morgan either to fight or retreat into North Carolina. Tarleton reached the Pacolet on the evening of Jan. 15. Morgan had intended to dispute the passage of the river, but being inferior in cavalry retired toward Broad river. Tarleton pressed on in pursuit, and on the morning of the 17th came up with Morgan in an open wood known as Hannah's Cowpens, being part of a grazing establishment belonging to a man named Hannah. The American troops, about 1,000 in number, were drawn up in two lines, the first composed of Carolina militia, with an advance corps of volunteer riflemen under the command of Col. Pickens, and the second of Maryland regulars and Virginia riflemen under Lieut. Col. Howard. In the rear was a reserve of cavalry, consisting of Lieut. Col. Washington's troop, 80 strong, and about 50 mounted volunteers under Major McCall. The British advanced to the charge, receiving an effective fire from the American riflemen, who in obedience to Morgan's orders fell back upon the first line. The latter stood firm until within bayonet thrust of their opponents, when they also fell back upon the second line. Col. Howard attempted to change his front to the right, the order for executing which was misinterpreted into one for a retreat, and the whole line was thrown into some confusion. At this moment Morgan ordered them to retreat to an eminence behind which the cavalry were posted. The British rushed forward in some disorder, when they were met by a charge from Washington's dragoons. At the same time Howard's troops facing about gave them a volley of musketry, which was followed up so effectively with the bayonet that in a few minutes the British line was broken and put to flight. Tarleton, with a small band of horsemen, made a precipitate retreat, hotly pursued by Col. Washington. The British loss amounted to 300 killed and wounded, and between 500 and 600 prisoners. The Americans had 12 men killed and 60 wounded.

COWPER, William, earl, an English judge, born at Hertford in 1664, died in 1723. He was called to the bar in 1688, and led a company to welcome the prince of Orange. He entered parliament in 1695, and in 1705 was made lord keeper of the great seal. The next year he was raised to the peerage, and was a commissioner for the union of England and Scotland. In 1707 he was made lord high chancellor, and in this office abolished the customary gifts which had produced to the chancellors some £3,000 a year. He resigned in 1710, but was reappointed in 1714, at the accession of George I., and was efficient in the settlement of the difficulties of 1715. In 1716 he was made lord high steward, in 1717 Viscount Fordwich, and in 1718 earl. He resigned finally in 1718, but was active in parliament as long as he lived. A story, circulated on the authority of Voltaire, that he lived at the same time with two wives and defended the practice, although apparently unfounded, gave him the common nickname of "Will Bigamy."—His wife was lady of the bedchamber to the princess of Wales, afterward queen. Her "Diary of Mary, Countess Cowper," was published in 1864.

COWPER, William, an English anatomist, born in Hampshire in 1666, died in 1709. His professional life was passed in London, where he made several communications to the royal society, which appeared in the "Philosophical Transactions." In 1694 he published *Myotomia Reformata*, an anatomical work on the muscular system; and in 1697 the "Anatomy of Human Bodies." His name is given to the two small lobulated mucous glandules, known as Cowper's glands, connected with the membranous portion of the male urethra, directly behind the bulb. He was accused of plagiarism in using for illustrations to his work on anatomy plates belonging to the Dutch anatomist Bidloo.

COWPER, William, an English poet, born at Great Berkhamstead, Hertfordshire, Nov. 15, O. S. (26, N. S.), 1731, died at East Dereham, Norfolk, April 25, 1800. His father was one of the chaplains to George II. and nephew to the lord chancellor Cowper, and rector of the parish where the poet was born. His mother died when he was but six years of age, and the touching lines in which he recalls her memory show the deep impression she had left on his mind. His health was insecure, and he was for two years under the care of an oculist. At the school in his native town, and afterward at Westminster, his extreme timidity exposed him to the tyranny of older and stronger boys. At 18 he began to study law, and was admitted to the bar in 1754, but his chief attention was given to literature and society. He formed an attachment for his cousin Theodora Cowper, sister of Lady Hesketh; but their union was forbidden by her father, first for prudential reasons, and then because of their consanguinity. In 1763 he was appointed reading clerk to the committees of the house of lords, but his morbid timidity made him shrink from appearing before the lords, and in his excitement he sought to commit suicide. He soon became actually insane, and was removed to an asylum, and during the remainder of his life was subject to returns of mental alienation. He fancied himself destined to eternal woe, and shunned the society of his kindred to find relief among strangers. His relatives, however, watched over him and provided for his support. His reason returned in 1765, and he went from the asylum to Huntingdon, where he met the Unwin family and became a lodger in their house. In 1767 Mr. Unwin died suddenly, and Cowper removed with the widow to Olney in Buckinghamshire, attracted by the residence there of the Rev. John Newton. Here he passed many years,

occupied with religious exercises and charities. Olney is a damp, sickly place, and doubtless aggravated Cowper's morbid peculiarities, and he suffered returns of insanity from 1773 to 1776. Lady Austen turned his attention to poetry, and Mrs. Unwin suggested to him several subjects for poems. He contributed 68 hymns to a collection made by Newton, called the "Olney Hymns;" and in 1782, when he was 50 years of age, he published his first volume. It was tolerably well received; but the ballad of "John Gilpin," which he wrote from a story told him by Lady Austen, gave him a wide renown. The ballad had been published anonymously, and lay for three years neglected until suddenly it caught the attention of the public. It was read to crowded audiences in London by Henderson the actor, and one publisher alone sold 6,000 copies of a print of John Gilpin on his famous ride. Lady Austen next suggested to him, as a task, that he should write some verses about a sofa, and what might be seen from it; whence the title of his longest original poem, "The Task," which was published in 1785, and gained general popularity. He next translated Homer in blank verse, and published it by subscription in 1791. He undertook a new edition of Milton, with translations of the Latin and Italian poems; but the condition of his mind prevented him from completing this work. His faithful friend Mrs. Unwin having become paralytic, his cousin Lady Hesketh came to take charge of his household; but in 1795 he removed from Olney with Mrs. Unwin to the house of his relative the Rev. Mr. Johnson, at Tuddenham, and finally to East Dereham. A pension of £300 had been settled upon him by the king, chiefly through the active solicitations of the poet Hayley; but Cowper when it was announced to him showed no marks of pleasure. In 1796 Mrs. Unwin died; the poet, it is said, looked in silent agony upon her corpse, and then turned away and never afterward mentioned her name. A slight recovery of his mental powers enabled him in 1799 to revise his Homer, and to write his last poem, "The Castaway," a picture of his own sad fate; but he died of dropsy in the spring of the following year.—Cowper's writings are original, truthful, and striking. In poetry he was one of the first to break away from the despotism of Pope and invent an original rhythm. He is never melodious, but always natural and at his ease. He loved nature, flowers, animals, and rural life, and paints scenery with great power. His descriptions are sometimes coarse, but always clear and effective. The moral teaching of his poetry is high, and he strove to force upon his material age the noblest conceptions of the spiritual and the divine. With this religious turn of thought he joined humor and forcible satire. He translated Homer with more accuracy than Pope, but with less elegance. His prose is excellent, and his letters are not surpassed by any in the language. Here, in his happier moods, all is playful humor, ease, gayety, simplicity, and wisdom. His mind seems to break from its clouds into moments of perfect sunshine. In character he was pure, his disposition amiable; he gained the love and respect of gifted men and virtuous accomplished women; he was charitable and active in doing good, tender and confiding to his friends, and capable of unchanging affection. So good a man might well have looked for happiness both here and hereafter; but it was Cowper's singular fate to pass a lifetime in despair. Hope was an impulse he never knew or never ventured to indulge. His appearance was intellectual and well bred, his manner pleasing, and his whole life that of a tasteful recluse. He cultivated flowers, and watched with interest the progress of his garden. He petted tame leverets and immortalized them in verse. He was careful of his dress, and, though shy of strangers, took pleasure in a narrow circle of well bred intelligent associates. His clouded mind, his mental agonies, and his generous kindly nature, endeared him to his friends, who loved, pitied, and admired him.—The life of Cowper was first written by William Hayley, for an edition of his posthumous writings (Chichester, 1803–'6). It has also been written by Thomas Taylor (London, 1833); by the Rev. T. S. Grimshawe for an edition of his works and correspondence (London, 1835); by Robert Southey, for a complete edition of his works (London, 1838); by H. F. Cary, for an edition of his poems, including his translations of the Iliad and Odyssey (London, 1839); and by Sir Harris Nicolas, for an Aldine edition of his poems (London, 1843). Southey's biography and edition are much the best, and have been republished, with additional letters, in Bohn's "Standard Library," in 8 vols.

COWRY, the common name of the marine gasteropod mollusk *cypræa*, the representative genus of the family *cypræidæ*. The shells are well known for their beautiful colors and polished surface; the aperture is narrow, the lips thickened, ridged, and turned in, channelled at each end; no operculum; the mantle expanded on each side, meeting on the back, where there is a paler line. The young shell has a thin and sharp outer lip, a prominent spire, and is without the enamelled surface of the adult. They inhabit shallow warm waters near the shore, feeding upon zoöphytes. Those of special interest are the orange cowry (*C. aurora*), worn by natives of the Friendly islands as a mark of chieftainship; the ring cowry (*C. annulus*), used by the Asiatic islanders to adorn their dress, for sinkers to their nets, and for barter; and the money cowry (*C. moneta*), used as money, and the young shells of which, with the convex portion cut away and the cavity filled with sealing wax, are favorites with boys in the game of "shaking props." This last is an eastern and Pacific shell, and is an important article of trade, being

largely imported into Calcutta and Bombay from the Laccadive and Maldive islands. Their value in Bengal used to be rated at 2,400, then at 2,560, but now more than 3,200 to the



Tiger Cowry (Cypræa tigris).

rupee, the worth of which is about 50 cents. They are largely imported into Liverpool. They are sent to the western coast of Africa for barter with the natives. A species of this family called the *C. princeps*, "the brindled cowry of the Persian gulf," is very highly prized by conchologists for its rarity and beauty. Only two specimens are known; one is in the British museum, and the other was sold some years since in London, at the sale of the collection of the earl of Mountnorris, for £40. A specimen of the *C. umbilicata* was sold in 1850 for £30. The cowries, from the great variety and beauty of the markings upon their smoothly polished surface, have long been in demand among civilized and uncivilized nations for ornaments to their dress and habitations. The tiger cowry (*C. tigris*) is the one so generally seen upon the mantels of houses in various parts of this country.

COW TREE (*brosimum galactodendron;* Sp. *palo de vaca*), an evergreen of the natural order *urticaceæ*, indigenous in the Cordilleras



Cow Tree—Leaves and Fruit.

of Carácas, having oblong, pointed, coriaceous, and alternate leaves about 10 inches long, and especially distinguished by its sap, which almost exactly resembles milk, and flows copiously from incisions made in the bark. Of this sap Alexander von Humboldt, who first brought the tree to the notice of foreigners, writes: "We were assured that the negroes on the farm, who are in the habit of drinking large quantities of this vegetable milk, consider it as highly nutritive; an assertion which startled us the more, as almost all lactescent vegetable fluids are acrid, bitter, and more or less poisonous. Experience, however, proved to us, during our residence at Barbula, that the virtues of the cow tree, or *palo de vaca*, have not been exaggerated."

COX, David, an English landscape painter, born in Birmingham in 1793, died in 1859. His paintings, chiefly on Welsh subjects, are in water colors, small, and apparently careless, but full of the impression and effect of nature. He succeeded best in sketching rain and wind, bursts of sunshine on dark moors, and the dank herbage of marshes. He published in 1814 a "Treatise on Landscape Painting in Water Colors," which is still considered the best series of lessons on water-color painting. His son DAVID is also a painter of ability.

COX, Francis Augustus, D. D., an English Baptist clergyman, born March 7, 1783, died in September, 1853. He graduated at the university of Edinburgh, became pastor at Hackney, near London, in 1811, and was active in procuring the establishment of the London university. He was chosen about 1840 to visit the United States, for the purpose of cultivating fraternal feeling between the Baptists of the two countries. Dr. Cox was a contributor to the "Eclectic Review" and other periodicals, and published a "Life of Melanchthon" (1815), a prize essay, "Our Young Men" (1838), "Female Scripture Biography" (2 vols. 8vo, 1852), and other works.

COX, Jacob Dolson, an American lawyer and soldier, born in Montreal, Canada, Oct. 27, 1828. His parents, who had been temporarily in Canada, were residents of New York city, where he studied law for a while. He then went to Ohio, studied at Oberlin college, and was admitted to the bar in 1852. In 1859 he was elected state senator. In April, 1861, he was made brigadier general of the state militia in Ohio, and placed in command of a camp of instruction. In May he was appointed brigadier general of U. S. volunteers, and commanded in the valley of the Kanawha, from which he drove out the confederates under Gen. Henry A. Wise. In August, 1862, he was assigned to the army of Virginia, under Gen. Pope. After the death of Gen. Reno he commanded the 9th army corps at the battles of South Mountain and Antietam (Sept. 14–17, 1862), and in April, 1863, was assigned to the command of the district of Ohio. He served during the Atlanta campaign of 1864, and was made major general of volunteers in December of that year. In March, 1865, he fought the battle of Kingston, N. C., and then united his force with that of Gen. Sherman. In 1866 he

was elected governor of Ohio. In 1869 he was appointed secretary of the interior by President Grant, but resigned in November, 1870, on account of disagreement with some measures of the administration.

COX, Richard, an English prelate, born at Whaddon about 1500, died in 1581. He was educated at Eton and King's college, Cambridge, and when Christchurch college at Oxford was founded by Cardinal Wolsey, he was chosen one of its officers; but adopting the doctrines of the reformers, he was thrown into prison. He was subsequently made master of Eton, and through the influence of Cranmer became a prebendary of Ely cathedral in 1541. He was tutor to Prince Edward, afterward Edward VI., upon whose accession he became chancellor of Oxford, canon of Windsor, dean of Westminster, and a privy councillor. When Mary began her reign he was imprisoned in the Marshalsea, but was soon released, and fled to the continent; but on Elizabeth's accession he returned to England, and was made bishop of Ely, which see he held for 21 years, and worked zealously and even violently for the reformed faith. He took an active part in the preparation of the liturgy. The revision of the Gospels and the Acts of the Apostles, in the edition of the Scriptures called the "Bishops' Bible," was made by him.

COX, Samuel Hanson, an American clergyman, born at Rahway, N. J., Aug. 25, 1793. He was brought up in the society of Friends, of which his family were members. In 1811 he began the study of law, but abandoned it within a year for that of theology, and was ordained by the presbytery of New Jersey, July 1, 1817. In 1820 he became pastor of the Presbyterian church in Spring street, New York, and soon obtained prominence in the denomination. The degree of D. D. was conferred upon him by Williams college in 1825, but in a letter to a newspaper he declined to accept what he styled the "semi-lunar fardels;" he was always, however, styled Dr. Cox. In 1833 he visited Europe. During the early years of the anti-slavery agitation he took a prominent part in the movement, and his house and church were sacked by a mob, July 10, 1834. In the autumn of that year he became professor of sacred rhetoric in the theological seminary at Auburn, N. Y., and in 1837 pastor of the first Presbyterian church in Brooklyn, where he remained till 1854; and during a considerable part of this period he was also professor of ecclesiastical history in the Union theological seminary, New York. After the disruption of the Presbyterian church in 1837 he was a prominent member of the New School branch, was several times appointed its delegate to the religious gatherings in Europe, was one of the committee to prepare a hymn book for the denomination, and in 1846 was moderator of the general assembly. He has been active in the benevolent and reformatory movements of the day, and noted for the peculiar style of his eloquence, for his rare conversational powers, and for his intense dislike of Episcopacy, especially as developed in its so-called high church form, some allusion to which was inevitable in almost all of his sermons and historical lectures. In 1854, his voice having partially failed, he resigned his pastorate, and took up his residence at Owego, N. Y. Besides discourses and sermons, he has published "Quakerism not Christianity" (1833), and "Interviews, Memorable and Useful, from Memory reproduced" (1853).

COX, Samuel Sullivan, an American lawyer and politician, born at Zanesville, Ohio, Sept. 30, 1824. He graduated at Brown university in 1846, and became a lawyer and editor in Ohio, travelled in Europe, and in 1855 was appointed secretary of legation to Peru. In 1856 he was elected to congress from Ohio, and reëlected in 1858, 1860, and 1862, thus serving for eight years. During the civil war he took a prominent part in opposition to the general policy of the administration. In 1866 he took up his residence in New York, and was elected to congress from that city in 1868, and reëlected in 1870. In 1872 he was defeated as candidate at large for the state, his opponent having a majority of 37,599. He has published "The Buckeye Abroad" (1852), "Eight Years in Congress" (1865), and "Search for Winter Sunbeams," a narrative of travel in Italy, Corsica, Algeria, and Spain (1870).

COXCIE, or **Coxis, Michael,** a Flemish painter, born at Mechlin in 1497, died in Antwerp by a fall from a scaffolding in 1592. He studied under Bernard van Orley, and afterward at Rome, and returning home gained great fame and wealth. He is better known by his copy of the "Adoration of the Lamb," by the brothers Van Eyck, in the church of St. Bavon at Ghent, than by his many original productions. This copy was made for Philip II. of Spain, and cost two years of labor. It was finished in 1559. He could find no blue good enough for the mantle of the Virgin, and the king wrote to Titian for some ultramarine, of which Coxcie used to the value of 32 ducats on the mantle alone. This picture was sent from Madrid to Brussels by Gen. Belliard during the French occupation. It was in several parts, which are now scattered in the royal gallery of Berlin, in the Pinakothek at Munich, and in the collection of the king of Holland. Without much originality, Coxcie yet conferred a service upon his native land by introducing the knowledge of the Italian masters. He is distinguished for grace and an agreeable individuality. His illustrations of the fable of Psyche were engraved by Agostino Veneziano, and have furnished the models for innumerable paintings on glass.

COXE, Arthur Cleveland, D. D., an American bishop, son of the Rev. Samuel Hanson Cox, born at Mendham, N. J., May 10, 1818. He graduated at the university of New York in 1838, took orders in the Episcopal church in 1841, and afterward officiated at Morrisania,

N. Y., Hartford, Conn., Baltimore, and New York. In 1865 he was chosen bishop of the diocese of Western New York. Besides several early volumes of poetry, and a collection of "Sermons on Doctrine and Duty" (1854), he has published "Christian Ballads" (1840); "Athanasion and other Poems" (1842); "Halloween and other Poems" (1844); "Saul, a Mystery, and other Poems" (1845); "Impressions of England" (1856); "Criterion" (1866); "Moral Reforms suggested in a Pastoral Letter" (1869); and "Apollos" (1873).

COXE, Tench, an American writer on political economy, born in 1756, died in Philadelphia, July 16, 1824. He was a commissioner to the federal convention at Annapolis in 1786; member of the continental congress in 1788; assistant secretary of the treasury in 1790; and he held other offices under the government. He was the author of "An Inquiry into the Principles of a Commercial System for the United States" (1787); "View of the United States" (1794); Thoughts on Naval Power and the Encouragement of Commerce and Manufactures" (1806); "Memoir on the Cultivation, Trade, and Manufacture of Cotton" (1807); "On the Navigation Act" (1809); and "On the Arts and Manufactures of the United States" (1814).

COXE, William, an English historian and biographer, born in London in 1747, died at Bemerton in 1828. He was elected a fellow of King's college, Cambridge, in 1768, and in 1771 was appointed to the curacy of Denham. Shortly after this he commenced a series of extended visits to the continent as private tutor to young noblemen, which, with occasional intervals for literary or professional labor, embraced a period of more than 20 years. The result of his observation and researches was given to the world in a number of books of travel, and of history and biography. He published between 1779 and 1789 "Travels into Poland, Russia, and Denmark" (5 vols.), "Travels in Switzerland" (3 vols.), and some miscellaneous works on Russian discoveries, on hospitals in northern Europe, and other subjects. In 1798 appeared his "Memoirs of the Life and Administration of Sir Robert Walpole" (2 vols.), accompanied by many valuable state papers, of which Pitt said that it gave him his first correct notion of the character of Sir Robert. His "History of the House of Austria" (3 vols., 1807) is a standard authority. This was followed by the "History of the Kings of Spain of the House of Bourbon" (3 vols., 1813), "Memoirs of John, Duke of Marlborough" (3 vols., 1817–'19), "Memoirs of the Administration of the Right Hon. Henry Pelham" (2 vols., 1829), and a variety of minor publications. He was appointed archdeacon of Wilts in 1805, and during the last seven or eight years of his life was afflicted with total blindness.

COYNE, Joseph Stirling, a British playwright and humorist, born at Birr, Ireland, in 1805, died in London, July 18, 1868. He studied law, but devoted himself to writing for the stage. His first farce, "The Phrenologist," was produced in Dublin in 1835. In 1837 he went to London, where he wrote many plays which were favorably received. Among these were "The Queer Subject," "Everybody's Friend," "Nothing Venture, Nothing Win," "Presented at Court," "The Woman in Red," and "How to Settle Accounts with your Laundress," the last of which has been adapted, under other titles, to the French and German stage. He was one of the projectors and original proprietors of "Punch," to which he was a frequent contributor, and he also wrote much for the newspapers. From 1856 to 1868 he was secretary to the dramatic authors' society. He also published "The Scenery and Antiquities of Ireland," and several other works.

COYOTE. See WOLF.

COYPEL. I. Noël, a French painter, a successful imitator of Poussin, born in 1628, died in 1707. Among his most celebrated pictures are the "Death of Abel" and the "Assumption of the Virgin," the latter in the hôtel des Invalides. **II. Antoine,** a son and pupil of the preceding, born in 1661, died in 1722. He was appointed painter to the king in 1716. His principal works are the "Assumption" in the church of Notre Dame, "Christ Curing the Blind," and "Christ among the Doctors." Some of his etchings are executed in a masterly manner. The "Numismatic History of the Reign of Louis XIV.," chiefly from his designs, is a work as remarkable of its kind as his frescoes of the chapel at Versailles. **III. Noël Nicolas,** stepbrother of the preceding, born in 1688, died in 1734. He also painted many works for the churches of Paris, of which the best are the ceiling of the chapel of the Virgin in the church of St. Saviour, and the "Assumption" in the same chapel. **IV. Charles Antoine,** son of Antoine, born in 1694, died in 1752. He chiefly excelled as painter of portraits, the best of which is that of Adrienne Lecouvreur.

COYPU, Racoonda, or **Couia,** a large rodent of South America, resembling a small beaver in general appearance, but having the long and



Coypu (Myopotamus coypus).

rounded tail of the muskrat or water vole. The length of a full-grown animal is about 3

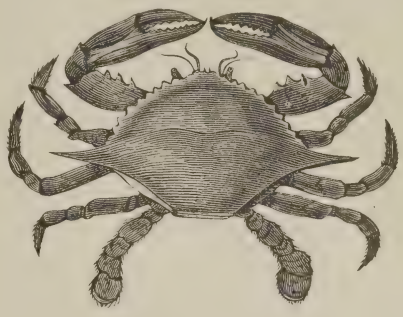
feet, of which the tail is 15 inches; the long fur is variegated with light red and brown, and is extensively used by hatters under the name of *nutria*. It is the *myopotamus coypus* (Cuv.). It is an excellent swimmer, but awkward upon land; quick and lively in its motion, amusing in its habits, and of gentle disposition. It lives in holes of the banks of the rivers, and on the shores of the sea.

COYSEVOX, Antoine, a French sculptor, of Spanish origin, born in Lyons in 1640, died in Paris, Oct. 10, 1720. He produced several fine statues of Louis XIV., a statue of Condé, and of other eminent persons. Among his best works are the tombs of Mazarin and Colbert, the monument of Lebrun, and two statues of a flute player and Flora.

COZZENS, Frederick Swartwout, an American merchant and author, born in New York, March 5, 1818, died in Brooklyn, Dec. 23, 1869. He was a wine merchant in New York, and for some time edited a periodical entitled "The Wine Press," for which he wrote several valuable papers on the culture of the grape and the production of wine. He also wrote for literary periodicals. In 1853 a series of papers by him which had appeared in the "Knickerbocker" magazine was published under the title of "Prismatics, by Richard Haywarde." In 1856, under the title of "Sparrowgrass Papers," he published a series of sketches which had appeared in "Putnam's Magazine." This is his best work. He afterward published "Acadia, or a Sojourn among the Blue Noses" (1858), "Sayings of Dr. Bushwhacker and other Learned Men" (1867), and "Fitz-Greene Halleck, a Memorial" (1868).

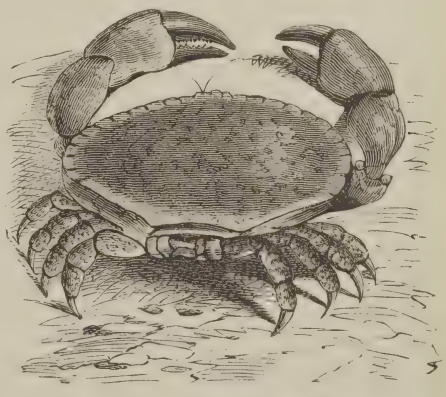
CRAB, an articulated animal of the class *crustacea*, having ten legs, of which the front pair terminate in pincer-like claws. The species of crabs are very numerous, and belong to many different families and several higher groups of their class. Among the crabs proper there are two well marked groups: the true brachyurans, like the common and the blue or edible crab, in which the abdomen, or tail, is small, held closely beneath the body, and in the male without appendages except upon the two segments next the body; and anomurans, of which the hermit or soldier crabs, the purse crabs, &c., are representatives, and in which the abdomen is not so closely appressed to the under side of the body, and has appendages, in both sexes, upon next to the last segment. The king crabs, or horseshoe crabs (*limulus*), are among the lowest forms of crustaceans, and by many naturalists are regarded as more nearly allied to the spiders and scorpions, or else as representing a distinct class. The majority of the species of crabs are marine, although many, especially in the tropics, inhabit fresh waters, while others are terrestrial, at least for the greater part of their lives. The marine species are found along the shores, and many of them live at great depths, some species having been brought up from nearly the greatest depths explored by the dredge; while others are truly pelagic animals, living always near the surface of the water and far from land, except when driven ashore by storms. Two such pelagic species are very abundant among floating seaweed in the Gulf stream, and several others are found in the Pacific and Indian oceans. Most of these pelagic species, as well as many others, have the last segments of the hind pair of legs expanded into lamellar paddle-like organs, by means of which they swim with considerable rapidity. These swimming species mostly belong or are allied to one family, the *portunidæ*, but a few are also found in widely different families.—Crabs, as also lobsters, shrimps, &c., belonging to the same class, have the body divided into two regions, the consolidated head and thorax, called the cephalothorax, and the tail or abdomen, composed of seven segments, some of which are, however, partially consolidated together. In the higher groups the cephalothorax is covered with a large shield-like shell, or carapace, and in all the groups it bears 14 pairs of appendages, representing as many segments of the consolidated body. These appendages are, beginning in front: 1, the pedunculated eyes; 2, 3, two pairs of antennæ, which serve as organs of hearing, touch, and perhaps other and special senses; 4, the stout molar-like jaws or mandibles; 5, 6, 7, 8, 9, five pairs of leaf-like jaws which fit closely upon the mandibles and serve to hold and manipulate the food, and of which the outer pair are larger and thicker than the others, and serve when closed to cover the whole mouth opening; 10, the large prehensile claws; 11, 12, 13, 14, the four pairs of walking legs. The joints of the claws and legs are all hinge-like, admitting of motion only in one plane; but, as each joint moves in a different plane, the combination of joints admits of motion in any direction without turning, although they usually run sideways, moving either to the right or left with equal facility. The stomach is situated just above and back of the mouth, and is furnished with strong concentric teeth, which further masticate the food after it is taken into the stomach. The heart is situated just behind the stomach and close to the carapace. The blood is nearly transparent, and is oxygenated by passing into gills attached to the bases of the legs and occupying a large space under each side of the carapace. The males can be distinguished from the females by having narrower tails without appendages except upon the first two segments, while the females have branching appendages upon the third to the sixth segments. These appendages upon the tail of the female serve for the attachment of the eggs after they are laid, they being fastened to the numerous hairs with which the appendages are clothed. The eggs are carried thus until they hatch. After hatching, the young of nearly all the crabs undergo a remarkable metamorphosis. When first hatched

from the egg, the common crab (*cancer*) of our Atlantic coast is a little free-swimming animal, having a somewhat globular body armed with a long spine projecting down between the enormous eyes, another spine upon the back longer than the whole animal, and another smaller one upon each side, and a slender tail without appendages, but with the last segment expanded into a broad, horizontal caudal fin. In this stage the claws and legs are wholly wanting, and there are no gills; but some of the jaw-like appendages of the mouth are developed into long, two-branched swimming appendages, by means of which the animal swims rapidly about in the water, where it lives most of the time at the surface. The young in this condition were long ago described under the name of *zoëa*, and it is still called the zoëa stage. After casting the skins several times and increasing much in size, swimming legs, like those of shrimps, are developed on the under side of the tail, and soon the claws and legs appear, the mouth appendages become much like those of the adult, and the spines upon the body have either disappeared or become much smaller. This is called the megalops stage, the name having been applied to them before it was known that they were the young of crabs. Finally, at one casting of the skin, the swimming legs upon the abdomen and the spines upon the body disappear, and the little crab, now about an eighth of an inch long, comes forth in something like the adult form, gives up its free-swimming existence, and afterward lives upon the shore or bottom. Most species pass through similar changes, but there are apparently exceptions in some of the land and fresh-water crabs, which are said to be hatched in a form much like the adult. The subsequent increase in size takes place only at the times of casting the shell, which occurs frequently at first, but finally, in most species, only once a year, and in old individuals of some species still less frequently. At this period the animal seeks some sheltered situation, the whole integument becomes detached from the new one forming beneath it, the carapace separates from the body just above the bases of the legs nearly all round, and the legs and other appendages are slowly drawn out of their old shells. The shells of the big claws and other appendages are not cracked or broken, but the new integument is so soft and yielding and the muscles in such a flaccid condition that the limbs are drawn through the small openings at the joints, much as a sack nearly filled with some fluid may be drawn through an opening much smaller than the sack itself. For some time after leaving the old shell the crabs are in a very soft and defenceless condition, as the new shell hardens quite slowly. In this state the common edible or blue crabs (*callinectes hastatus*) of our Atlantic coast are sold in the markets as "soft-shelled crabs," and are much more highly esteemed for food than when in the normal or hard-shelled condition. Many species are extensively used for food in different countries, and nearly all of them would probably be found edible. They are eagerly devoured by fishes,



American Edible Crab (Callinectes hastatus).

and constitute a large part of the food of many valuable kinds. The one of most importance as an article of food on the Atlantic and gulf coast of the United States is the blue crab just referred to. This is one of the swimming species, and is found especially in estuaries and brackish waters, from Cape Cod to the gulf of Mexico. Other species of the same genus, found in the West Indies and on both coasts of Central and South America, are extensively used for food. The common or rock crabs (*cancer irroratus* and *borealis*), large, mottled, reddish brown species, with nine small teeth on each side of the carapace, are also sometimes sold in the markets of New England; and similar species of the same genus are common in San Francisco, while another species (*cancer pagurus*) is much used on the coast of Europe. The species most extensively used in many parts of Europe is, however, the green crab



Common Crab of Europe (Cancer pagurus).

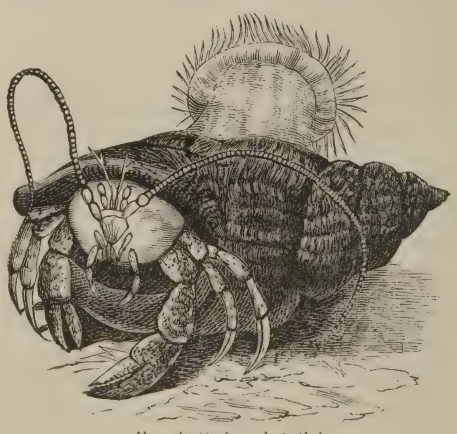
(*carcinus mœnas*), which is smaller and has only five teeth on each side of the carapace. This is common upon the southern coast of New England, but is here seldom if ever used for food. Upon the coast of the southern states

a very large and massive species (*menippe mercenaria*), with the body often five or six inches across, is caught in great numbers for the market. In tropical countries very numerous species, and among them many land and fresh-water ones, are much used as food.—The sand crab, or swift-footed crab (*ocypoda arenaria*) and the fiddler crabs (species of *gelasimus*) are among the most highly developed species. The sand crab is almost exactly the color of common beach sand, has a nearly square body, often two inches or more across, long legs, and short claws, nearly alike on the two sides. It is found from New Jersey to Brazil, and closely allied species of the same genus are found upon the west coast of Central and South America and in the old world. Our species digs deep holes in sandy beaches just above high-water mark, and when overtaken away from its hole runs so swiftly over the sand that it is difficult to catch. It is carnivorous, catching beach fleas, &c., or feeding upon fish or other dead animals thrown upon the shore. Although the adults are almost entirely terrestrial, the young



Fiddler Crab (Gelasimus vocans).

as soon as hatched swim freely in the water until, in the megalops stage, they are fully a fourth of an inch across the body, but still very unlike the adult. In this stage they are often thrown upon the beaches as far north as Block island. After coming upon the shore they bury themselves in the sand, and probably soon after change to the adult form. The fiddler crabs are more abundant in sheltered situations, especially on salt marshes; they are found upon the coasts of nearly all the warmer countries, and three species are common from Cape Cod to Florida. Our species are all much alike, and are at once distinguished by the males having one of the claws, sometimes the right, sometimes the left, enormously developed and much larger than the whole body, while the claw upon the other side is very small, as both are in the female. They dig holes somewhat in the manner of the sand crabs, but usually between tides, and the males run over the shores and marshes, holding up the big claw in front of them in a threatening manner. This way of carrying the big claw has probably given rise to the common name. The little oyster crab (*pinnotheres ostreum*) is found wherever oysters occur on our coast. The female lives, at least when mature, within the shell of the oyster, in the gill cavity. The males are much smaller than the females, being no larger than a small pea, and are rarely if ever seen within the oyster, but are sometimes found swimming at the surface of the water. Other similar species live in many kinds of bivalve shells, and an allied species, found upon the west coast of South America, lives inside a sea urchin or echinus. The spider crab (*libinia canaliculata*) of our Atlantic coast has a somewhat pear-shaped body and exceedingly long legs, often spreading more than a foot across, and is always covered with mud, barnacles, and other foreign substances, which tend to conceal it from its enemies. It is a representative of a very large class of crabs, some of which are among the largest known. One of them, a species of *macrocheira*, found in Japan, sometimes measures 10 ft. across the expanded legs. The land crabs (species of *gecarcinus* and other allied genera) have the gills so constructed that they are able to live for a long time away from the water, and are even found high up upon mountain sides. They are said, however, to journey to the sea once a year, probably for the purpose of depositing the eggs.—Among the anomurans there is even a greater diversity in form and habits than among those previously mentioned, but the species are not so numerous or important. The hermit or soldier crabs are the most familiar and widely distributed of the group, numerous species being found from the Arctic ocean throughout the tropics. Their peculiar habit of living in the spiral shells of mollusks has long attracted attention. The shells which they inhabit are often covered with hydroids or other foreign substances, and some species always have



Hermit Crab and Actinia.

an actinia upon the shell. The hind part of the body and the abdomen are soft, protected only by a thin integument, and the abdomen is one-sided and curved spirally, so as to fit the shells which they always inhabit and drag about with

them, while the legs and claws are all directed forward and occupy the opening of the shell. Most of the species pass through a metamorphosis, the first stage of which is much like that of the common crabs; but after they have attained considerable size and have acquired the full complement of legs and claws, the abdomen is perfectly symmetrical and furnished with appendages, as in shrimps and lobsters. In this and the earlier stages they swim about freely at the surface of the water, but soon change their form and begin to inhabit small shells, which are from time to time exchanged for larger ones as the crabs increase in size. When changing the shells, combats between individuals sometimes take place for the possession of the more desirable shells, and this has given rise to their common name. Some of the species in the tropics are terrestrial, like the land crabs, and travel long distances from the sea and even up among mountains, carrying the marine shells with them. The robber crab (*birgus*), inhabiting the islands of the Indian and Pacific oceans, is an enormous terrestrial crab allied to the hermit crabs, but does not inhabit shells, the abdomen being shorter and covered with a hard integument. It feeds upon cocoanuts, climbing the trees and breaking open the fruit with its claws, which are adapted to the purpose. Some of the anomurans approach closely in form to the brachyurans, resembling the common crabs except that the abdomen in both sexes has appendages upon the segment next to the last. The species of *hypoconcha*, which inhabit both coasts of tropical America, are of this form, but they always carry one of the valves of a bivalve shell upon the back, which is soft and unprotected. The shell is held in place by the hind legs, which are specially adapted to the purpose. Species of an allied genus carry compact sponges, or similar substances, in the same way. Others have a hard shell wholly unprotected. Such are the gigantic species of *lithodes* and its allies in the arctic and antarctic seas, and, in the warmer seas, the little, brightly colored porcellanians, with flattened bodies and large compressed claws.

CRAB APPLE. See APPLE.

CRABB, George, an English barrister and philologist, born at Palgrave, Dec. 8, 1778, died at Hammersmith, Dec. 4, 1854. Intended for the medical profession, his delicate nervous organization made him incompetent to follow it. He devoted himself to teaching, studied in Germany, and published on his return German text books, which were long in use. In 1821, after having been married 22 years, he graduated at the university of Oxford, with reputation for mathematical attainments. He was 51 years of age when he was admitted to the bar. His offensive manners prevented his success as a practitioner, but he made several contributions to legal literature which became standard works; among these is a "History of English Law." He is best known by his "English Synonymes," published in 1816. He was the author also of a historical and of a technological dictionary.

CRABBE, George, an English poet, born at Aldborough, Suffolk, Dec. 24, 1754, died at Trowbridge, Wiltshire, Feb. 3, 1832. His father, who was a collector of salt duties, exerted himself to give him a superior education, and at the age of 14 years apprenticed him to a surgeon near Bury St. Edmund's. Three years later he was transferred to another surgeon at Woodbridge, with whom he completed his apprenticeship. His father was a subscriber to a "Philosophical Magazine," the last page of which, devoted to poetry, he was accustomed to tear off before sending the numbers to be bound. These rejected sheets had first excited the poetical tastes and powers of his son, who, even during his school days, made many attempts at versifying. While at Woodbridge he competed successfully with a poem on "Hope" for a prize offered by the "Lady's Magazine," to which he continued to contribute. In 1775 his first separate publication, a poem on "Inebriety," was issued anonymously at Ipswich. Never pleased with his profession, he determined to abandon it for literary adventure, and, provided with a loan of £5, he worked his way in a sloop from Aldborough to the metropolis, where he arrived in 1780. He found no publisher; and his first printed poem, "The Candidate," which appeared anonymously in that year, was coldly received and brought him no profit. He wrote to Lord North, Lord Shelburne, and Lord Thurlow, but received no answer. Threatened with arrest, he applied without an introduction to Edmund Burke, at whose door he left a simple and manly letter, and then in his agitation walked Westminster bridge throughout the night. Burke received him kindly and introduced him to Fox, Reynolds, Johnson, and others, gave him advice and criticism about his poem "The Library," and secured for it a publisher in 1781. It was favorably noticed, and a second edition was published in 1783. Lord Thurlow, with tardy generosity, now invited him to breakfast and presented him with a bank note for £100. At Burke's persuasion he qualified himself for holy orders, was ordained a deacon in 1781 and a priest in the following year, and after a short curacy in his native parish was made chaplain to the duke of Rutland at Belvoir castle. In 1783 he published "The Village," which obtained immediate popularity, some of its descriptions, as that of the parish workhouse, being copied into nearly all periodicals. Lord Thurlow, declaring that he was "as like to parson Adams as twelve to a dozen," presented him to two small livings in Dorsetshire, and in 1785 he married a lady who was the object of his early love. After the publication of "The Newspaper" in that year he did not resume authorship for 22 years, assigning the death of his distinguished friends as his reason, but in truth

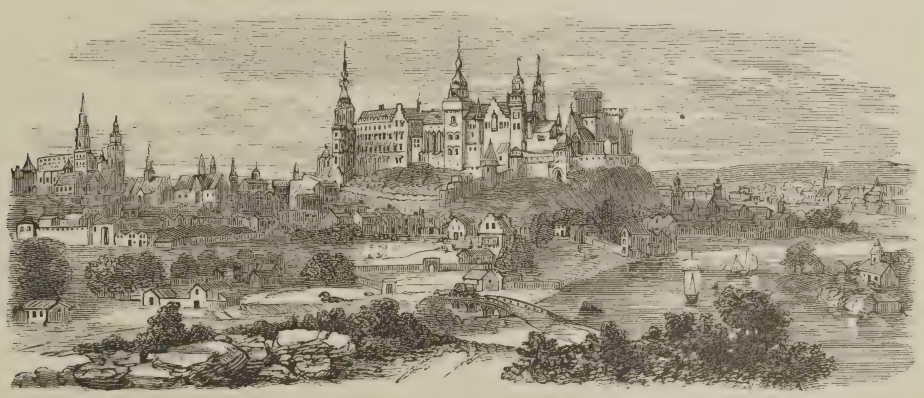
being occupied in most diligent and faithful discharge of the duties of his parish and home, as well as in the study of botany. In 1807 he published "The Parish Register," with some other pieces and a reprint of his earlier poems, for the purpose of sending his second son to Cambridge. These were followed in 1810 by "The Borough," and in 1812 by "Tales in Verse." The next year he suffered the loss of his wife, and from this time he made occasional visits to London, and associated with a younger generation of poets, among whom were Moore, Rogers, Campbell, Scott, Wordsworth, and Southey. In 1819 he completed his last publication, "Tales of the Hall," for the copyright of which and of all his previous works he received from Mr. Murray £3,000. His health began to decline in 1828, but his mind still retained its clearness and cheerfulness. His death was deeply felt in Trowbridge, where he had endeared himself to the people by his many charities and his blameless life.—The finest productions of Crabbe are "The Village," "The Parish Register," and some of his shorter tales, which are unrivalled for their severe and minute descriptions of humble life. The whole force of his genius, rarely diverted by bright ideal scenes or pictures of elegance and refinement, was bent upon delineating the circumstances and anatomizing the characters of poverty, vice, and misery. He is styled by Byron "nature's sternest painter, yet the best." A complete edition of his poetical works was published in 1834, in 8 vols., the first volume containing his letters and journals, and his life written by his son, the Rev. George Crabbe. His works were republished in 1847, in one volume.

CRABETH, Dirk and **Wouter,** two brothers, natives of Gouda, Holland, masters of painting on glass, lived in the 16th and the beginning of the 17th century. They painted the windows of St. John's church at Gouda, which are considered the most finished productions ever executed in that branch of art, and also the windows of other churches in Belgium and Paris, and probably also in Spain. The two brothers were excessively jealous of each other, Wouter being superior in correctness, and Dirk in brilliancy of coloring, with a more vigorous style and execution.

CRAB STONES, or **Crabs' Eyes** (*lapilli cancrorum*), concretions found in the stomach of the European crawfish. They are somewhat hemispherical in shape, of a laminated texture, and vary from ½ to 12 grains in weight. They consist of carbonate and phosphate of lime, with animal matter. They have been used, when ground and levigated, in the same dose and for the same purposes as prepared chalk, over which they possess no distinct advantages, and have gone out of use. (See CHALK.)

CRACOW (Pol. *Kraków;* Ger. *Krakau*), a city, formerly capital of independent Poland, from 1815 to 1846 of a republic of its own name, and since 1846 incorporated with the Austrian crownland of Galicia. It is situated in a plain surrounded by hills on the left bank of the Vistula, which there becomes navigable, and is crossed by a massive bridge connecting the city with the suburban town of Podgorze; lat. 50° 3′ N., lon. 19° 52′ E., 200 m. N. E. of Vienna; pop. in 1869, 49,834, of whom about 15,000 were Jews. It consists of the city proper and several suburbs, the chief of which are Kleparz, Stradom, and Kazimierz, the latter on an island of the Vistula, inhabited almost exclusively by Jews. Except this part, which is mostly a narrow and gloomy abode of misery, Cracow, with its old castle, once the residence of the kings, on the top of the Wawel, its large central square, its numerous churches, chapels, turrets, and steeples, offers the aspect of a handsome and picturesque old city; though several conflagrations, of which that of 1850 was one of the most destructive, have changed parts of it, and the ancient fortifications have been converted into modern encircling promenades. The royal castle, whose history is connected with that of the legendary Krakus and his daughter Wanda, of the Piasts and Jagiellos, having been destroyed by two conflagrations, restored by King Augustus II., fortified under the direction of Dumouriez, afterward the French general, in 1768, and repaired by the Austrians, has finally been converted by the latter into barracks. But the beautiful Gothic cathedral of the ancient residence still contains, in its numerous and splendid chapels, the tombs and monuments of St. Stanislas, whose remains are preserved in a silver coffin, of Casimir the Great, Jagiello and his wife Hedvig, the three Sigismunds, Stephen Báthori, John Sobieski, Copernicus, Prince Poniatowski, Kosciuszko, Dombrowski, Arthur Potocki, and other kings, queens, and celebrated men of Poland. Its bell, cast in 1520, its archives and library, as well as the royal insignia preserved in the vaults, are also shown to visiting travellers. A bishopric was established at Cracow about the year 1000, and in 1443 the bishops became sovereign dukes of Severia, the country between Cracow and Silesia. The larger portion of the diocese belongs to Russia, the smaller to Austria. The see has been vacant for some time, and in 1873 each part had a vicar apostolic, the one for Russia residing at Kielce. Cracow has more than 70 Roman Catholic churches, numerous convents and chapels, a number of synagogues, and one Protestant church. Other remarkable buildings are the episcopal palace, with a museum of Sarmatian antiquities, the city hall, and the Jagiello university. The latter, founded by Casimir the Great, and completed under Ladislas Jagiello, was for centuries one of the most flourishing institutions of Europe, but lost its importance through the influence of the Jesuits, and having been reorganized in 1817, had again to suffer restrictive alterations in 1833. In 1871 it had 70 professors and 563 students. A library containing numerous old books and valuable

manuscripts, a cabinet of natural history, a botanical garden, and an observatory belong to it. Cracow has also a polytechnic academy, with 24 professors and 378 students in 1871, two gymnasia, and a number of other institutions for public education, arts, sciences, and benevolence. In the vicinity of the city, the hill of Wanda, which commemorates the patriotic suicide of the daughter of Krakus, the Bronislawa (glory of arms), with a mound 150 ft. high erected in memory of Kosciuszko, and Lobzów, a summer residence built by Casimir the Great, attract the attention of travellers and patriots. The commerce of Cracow, though greatly decreased since the fall of independent Poland, and especially since the annexation to Austria, is considerable. It is still a centre of trade between Russian Poland, Galicia, and Hungary, and a chief depot for Hungarian wines, salt, and wax. The celebrated salt mines of Wieliczka are a few miles distant. Railway lines connect the city with Warsaw, Berlin, Vienna, Lemberg, and Pesth.—The foundation of Cracow is attributed by the legends of Poland to Krakus, a Slavic chief, who is supposed to have lived about the year 700. Under Ladislas Lokietek (the Short), who was crowned here in 1320, it took the place of Gnesen as capital of Poland. This dignity it maintained down to the reign of Sigismund III., who in 1609 transferred the seat of government to Warsaw. The kings of Poland, however, still continued to be crowned in the cathedral of Cracow. It was conquered in 1039 by the Bohemians, in 1241 by the Tartars, in 1655 by the Swedes under Charles X., in 1702 by Charles XII., and in 1768, after having for some time supported the cause of the confederation of Bar, by the Russians. After the fall of Kosciuszko, who made Cracow the starting point of his revolution, it was on the last partition of Poland (1795) taken by Austria. In 1809 it was annexed, together with western Galicia, to the duchy of



Palace at Cracow.

Warsaw, which had been created two years before by Napoleon. After the fall of Napoleon it was erected by the congress of Vienna, together with a small but fertile territory of about 500 sq. m. on the left bank of the Vistula, bounded by Russian Poland, Galicia, and Prussian Silesia, into an independent and neutral republic, under the protection of Russia, Austria, and Prussia. This miniature state, the last remnant of Polish independence, had a representative assembly, which held sessions in the last month of every year, and an executive senate headed by a president, who was elected for three years by the assembly, and confirmed by the protecting states. It contained about 150,000 inhabitants, of whom more than one tenth were Jews. The latter enjoyed no civil rights, and were besides subject to many humiliating mediæval restrictions. Grain, excellent fruits, cattle, coal, iron, and sulphur, and the reviving commerce of Cracow, were the chief sources of wealth. During the Polish revolution of 1830–'31, Cracow was under the influence of the national party, and many of its inhabitants fought in the ranks of the Polish armies. Having become a place of refuge to a small part of the corps of Rozycki toward the close of the war, it was occupied by the Russian general Rüdiger. The republic was now purged by the three protecting powers of all revolutionary elements, and finally reorganized in 1833. But new national agitations brought about another military occupation in 1836, this time executed by troops of all the three powers. This was followed by the expulsion of more than 500 persons, who were escorted to Trieste, to be transported to America. Scarcely had the troops retired when new conspiracies served in 1838 as a reason for a fresh occupation by the Austrians, which lasted till 1841. The revolutionary outbreak of February, 1846, which was prepared by a conspiracy for simultaneous action in all the provinces of ancient Poland, was for a moment successful in Cracow alone. The Austrians, who had again occupied the city, were driven beyond the Vistula, the restoration of Poland as a democratic republic was proclaimed, and

a provisional government organized under Tyssowski as dictator. The early detection of the conspiracy in the duchy of Posen, the easy suppression of the outbreak in Russian Poland, and particularly the great catastrophe in western Galicia, where the peasantry massacred the insurgent nobility with their followers and families, soon annihilated the hopes of the friends of Poland. Three armies were approaching. Thus pressed, the small body of Poles surrendered to the Prussians (March 3), and the republic of Cracow was soon after annexed to Austria by a resolution of the three protectors. Tyssowski went into exile, and died at Washington in 1857. Thus the stipulation of the congress of Vienna, which guaranteed the "perpetual freedom and independence" of the last small remnant of Poland, was set aside by three of the eight contracting powers, without the consent of the others. France and England protested in vain. The movements of 1848 but slightly disturbed the peace of Cracow. Since the reorganization of Austria in 1867, the city has again become one of the principal centres of the Polish nationality.

CRAFTS, Samuel Chandler, an American senator, born at Woodstock, Conn., Oct. 6, 1768, died at Craftsbury, Vt., Nov. 19, 1853. He graduated at Harvard college in 1790, in which year his father removed to Vermont. In 1792 he was elected town clerk of Craftsbury, and held that office for 37 successive years, although during that time he filled many other offices. From 1801 to 1805 he was at the same time town clerk, register of probate, assistant judge of the county court, and representative in the state legislature. He was chief judge 1810–'16, member of congress 1817–'25, chief judge again 1825–'8, and governor of the state 1828–'30. He was the youngest member of the convention which formed the constitution of the state in 1793, and he presided over the constitutional convention of 1829, being at the same time governor. He was appointed by the governor in 1842 to fill a vacancy in the United States senate, and on the convening of the general assembly was elected for the remainder of the term, retiring in 1843.

CRAFTS, William, an American lawyer and author, born in Charleston, S. C., Jan. 24, 1787, died at Lebanon Springs, N. Y., Sept. 23, 1826. He graduated at Harvard college in 1805, practised law in Charleston, and was several times a member of the state legislature. He was editor of the Charleston "Courier," and a favorite orator on public occasions, and in 1817 delivered the Phi Beta Kappa address at Cambridge. He wrote a few poems, chiefly local or humorous in character. A selection from his writings in prose and verse, including several orations, was published at Charleston in 1828, with a memoir of his life by the Rev. Samuel Gilman.

CRAIG, a S. W. county of Virginia, named from Craig's creek, by the sources of which it is drained; area, about 250 sq. m.; pop. in 1870, 2,942, of whom 230 were colored. The surface is mountainous, and the principal range of the Alleghanies extends along the N. W. border. The valleys are generally fertile, and produce corn, wheat, oats, and hay. The chief productions in 1870 were 23,854 bushels of wheat, 44,242 of Indian corn, 31,486 of oats, 1,605 tons of hay, and 48,080 lbs. of butter. There were 952 horses, 1,049 milch cows, 1,912 other cattle, 3,106 sheep, and 3,442 swine. Capital, New Castle.

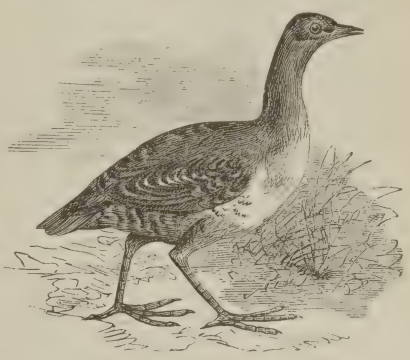
CRAIGHEAD, a N. E. county of Arkansas, touching Missouri at its N. E. corner, and intersected by Lake St. Francis; area, 950 sq. m.; pop. in 1870, 4,577, of whom 253 were colored. It is drained by Cache and L'Anguille rivers and Bayou Devieu. Crowley's ridge extends through the centre. The surface is level, and the soil in parts fertile. The chief productions in 1870 were 7,619 bushels of wheat, 122,395 of Indian corn, 12,498 of sweet potatoes, 1,298 bales of cotton, and 13,238 lbs. of tobacco. There were 1,016 horses, 1,703 milch cows, 3,012 other cattle, 2,396 sheep, and 8,448 swine. Capital, Jonesboro.

CRAIK, Dinah Maria Mulock, an English authoress, more generally known by her maiden name of Mulock, born in Stoke-upon-Trent, Staffordshire, in 1826. She is the daughter of a clergyman of the established church, and published in 1849 her first novel, "The Ogilvies," a work containing subtle delineations of character and life-like scenes, and which was well received by the public. It was followed in 1850 by "Olive," which proved no less popular, and in 1851 by "The Head of the Family," a story of Scottish life in the middle classes, and a fairy tale entitled "Alice Learmont." In 1852 appeared "Agatha's Husband," "Avillion and other Tales," and a number of stories and books for young people. In 1857 was published "John Halifax, Gentleman," which greatly enhanced her reputation as an earnest writer and a keen portrayer of character. An edition of her fugitive poems appeared in 1860. Since then she has written many works, among which are: "A Life for a Life," "Christian's Mistake," "Two Marriages," and "A Noble Life" (1866); "The Unkind Word, and other Stories" (1869); "Fair France: Impressions of a Traveller" (1870); "Little Sunshine's Holiday: a Picture from Life," and "Hannah" (1871). Besides these she has published collections of fugitive papers, entitled "Romantic Tales," "Domestic Tales," "Nothing New," "Studies from Life," "A Woman's Thoughts about Women," and a number of books for youth, including "Cola Monti, or the Story of a Genuis," "A Hero," "Little Lychetts," "Our Year," "Bread upon the Waters," &c. In 1864 a literary pension of £60 a year was awarded to Miss Mulock; and in 1865 she was married to Mr. George Lillie Craik, the younger. Her books have been regularly reprinted in the United States, where they are widely read and appreciated.

CRAIK, George Lillie, an English author, born in Fifeshire in 1799, died June 25, 1866. He studied theology at the university of St. Andrews, but did not take license as a preacher. He went to London about 1824, and wrote for the society for the diffusion of useful knowledge "The Pursuit of Knowledge under Difficulties" (2 vols., 1831). He was a principal contributor to the "Penny Cyclopædia" in history and biography, and in 1839 became the editor of the "Pictorial History of England," and wrote the chapters afterward expanded into separate works as "Sketches of the History of Literature and Learning in England" (6 vols., 1844), and the "History of British Commerce" (3 vols.). In the same series (Knight's "Weekly Volume") appeared "Spenser and his Poetry" (1845), and "Bacon and his Philosophy" (1846–'7). He wrote in 1847 another volume of "The Pursuit of Knowledge under Difficulties," containing female examples only. He was appointed in 1849 professor of history and literature in the Queen's college, Belfast, and afterward published "Romance of the Peerage" (4 vols., 1848–'50), "Outlines of the History of the English Language" (1851), "The English of Shakespeare," &c. His last work was "A Compendious History of English Literature and the English Language" (1861).

CRAIK, James, M. D., the family physician of Washington, born in Scotland in 1731, died in Fairfax co., Va., Feb. 6, 1814. He was educated for the medical service of the British army, emigrated to Virginia, accompanied Washington in the expedition against the French and Indians in 1754, and the next year was with Braddock in his fatal campaign. In 1775, by the aid of Washington, he entered the medical department of the army, and in 1781 he was director of the hospital at Yorktown. To him we owe the anecdote respecting the dangers incurred by Washington, and his remarkable escape, at Braddock's defeat. Fifteen years afterward, while exploring wild lands in the western districts of Virginia, he encountered a party led by an aged Indian chief, who informed him, by an interpreter, that he had made a long journey to see Col. Washington, at whom in the battle of Monongahela he had fired his rifle 15 times, and ordered all his young men to do the same. In fact, Washington had two horses killed under him, and his coat was pierced with four bullets. After the revolution Craik settled near Mount Vernon, and continued to be the physician of Washington until his death.

CRAKE, or **Corn Crake,** a European representative of the *rallidæ* or rail family of wading birds, of the genus *crex* (Bechst.). The bill is conical, shorter than the head, and the whole appearance and habits are much like those of gallinaceous birds. The European land rail or corn crake (*C. pratensis*, Bechst.) is about 10 inches long; the general color above is blackish brown, with lighter edges, but without white spots; grayish below. It lives and nestles in fields and meadows, running with great rapidity; its cry resembles the syllables "crex, crex," causing a disagreeable rattling in the throat, whence the name rail, derived from the French *râle*, according to Buffon. It is a solitary bird, remaining concealed during the day, and seeking its food in the morning and evening; it is a northern species, migrating to central Europe in spring and returning in October; the French call it "king of the quails,"



Corn Crake (Crex pratensis).

from its coming and going about the same time with that bird. In summer it seems to be a constant visitor to Greenland, and it is occasionally seen on the E. coast of the United States. It feeds principally on grains, insects, and worms. The American bird coming nearest to it is the yellow-breasted rail (*porzana Noveboracensis*, Vieill.); for its description, and for the characters of the family, see Rail.

CRAMER. I. Johann Andreas, a German poet and theologian, born at Jöhstadt, Saxony, Jan. 29, 1723, died in Kiel, June 12, 1788. He was an eloquent and learned divine, and next to Gellert the best of the religious poets whose writings contributed so much toward the regeneration of German poetry. He was pastor in various places, and through Klopstock's influence became in 1754 chief preacher at the court of Copenhagen. He acted there also as professor of theology from 1765 to 1771, and subsequently occupied important posts in Lübeck and Kiel, where in 1784 he became chancellor and curator of the university. He wrote a biography of Gellert (Leipsic, 1774), translated Bossuet's universal history, and prepared a poetical version of the Psalms (4 vols., 1762–'4). His poetical works were published in 1782–'3 (3 vols.), and his posthumous poetry at Hamburg in 1791. **II. Karl Friedrich,** son of the preceding, born in Quedlinburg, March 7, 1752, died in Kiel, Dec. 8, 1807. He was a student and member of the *Dichterbund* or poets' league at Göttingen, and subsequently became professor at Kiel, which post he lost in 1794 on account of his sympathy with the French revolution. He then established himself as a bookseller and publisher in Paris, but lost his fortune, and was obliged to leave the city. Klopstock addressed to him one of his

most beautiful odes, and his principal works relate to that poet (*Klopstock: Er und über ihn*, 5 vols., Hamburg, 1779–'92; *Klopstock, in Fragmenten aus Briefen von Tellow an Elisa*, 2 vols., 1777). He also published a French-German dictionary, and various works relating to his observations and experiences in Paris, besides translations from English and French into German, and from German into French.

CRAMER, John Baptist, a musical artist and composer, born at Mannheim, Baden, Feb. 24, 1771, died in London, April 16, 1858, where he passed most of his life in great esteem as a composer and as a performer and teacher on the piano. His exercises and studies for the instrument are used in all parts of Europe and in America. His compositions are considered models of simple construction, beauty, and grace.

CRAMOISY, Sébastien, a French printer, born in Paris in 1585, died in January, 1669. He was the first director of the royal printing office established at the Louvre in 1640. Many of the specimens of his work are very fine. He was one of the society of 100 associates founded by Cardinal Richelieu for colonizing Canada, and printed many of the Jesuit relations on that colony, and Père du Creux's Latin history of it. His business was continued by his family till the close of the 18th century.

CRANACH, or **Kranach, Lucas,** a German painter and engraver, born in Kranach, near Bamberg, in 1472, died in Weimar, Oct. 16, 1553. His family name was Sunder, but according to the custom of his time he took the name of his birthplace. He was court painter to three electors of Saxony—Frederick the Wise, John the Steadfast, and John Frederick the Magnanimous. He accompanied the first to the Holy Land in 1493, and shared the imprisonment to which the last was subjected after the battle of Mühlberg in 1547. He was burgomaster of Wittenberg, and enjoyed the friendship of Luther, Melanchthon, and the other great reformers, whom he frequently introduced into his pictures. The school of Saxony, of which he was the head, is parallel to that of Albert Dürer, with whom he had much in common, although the earnestness and grandeur of the latter are replaced in Cranach by a graceful and almost childlike simplicity. Like Dürer, however, he was swayed by the fantastic element then so prevalent in German art. His works are numerous in Germany, particularly in Saxony, and some good specimens are to be found in Florence. One of the most celebrated is an altarpiece at Weimar, representing in the middle the crucified Saviour, on one side of whom stand John the Baptist, the artist, and Luther, and on the other is the Redeemer victorious over death and the devil. On the wings are portraits of the elector and his family. The picture has remarkable power in parts, and the portrait of Luther is singularly grand. In the wings of another altarpiece in the city church at Wittenberg, representing the last supper, he has introduced Luther, Melanchthon, and Bugenhagen, performing various religious duties. In mythological subjects he was not less successful, and his nude female figures have sometimes much grace and beauty of form. He also excelled in portraits, and has left accurate likenesses of some of the most notable men of the time. As an engraver he was inferior to Dürer, but his woodcuts are highly esteemed.—His son, Lucas the younger, who was also a burgomaster of Wittenberg, and died there in 1586, formed his style on that of his father and of Dürer, and attained great excellence as a painter.

CRANBERRY, the small, red, acid fruit of the *vaccinium macrocarpon* and other shrubs of the same genus, distinguished by slender creeping stems, small evergreen leaves whitened beneath, and erect pedicles, terminated by a pale rose-colored nodding flower, with a four-parted corolla. The cranberry shrub grows best in lowlands, where the decay of organic matter furnishes the different organic acids. The related *V. oxycoćcus* is found wild in



Cranberry.

many parts of North and South America, in England and Ireland, in the marshy grounds of central and northern Europe, and on the wastes of Siberia. The American cranberry is larger than the English, and of richer flavor. The three principal varieties recognized in the markets are the cherry, bugle, and bell cranberries. The best of the cherry variety are very dark-colored. The requisites for successful cranberry culture are: a soil of muck or peat that can be drained for 12 or 18 inches below the surface; a supply of water sufficient to allow the meadow to be flooded at will; and an abundance of pure sand. The attempts to cultivate the cranberry upon ordinary soil, in a large way, have not been profitable. Localities suitable for cranberry meadows are to be found in most northern states, especially at Cape Cod, Mass., and in Ocean, Atlantic, and Burlington counties, N. J. These counties are estimated to supply more than one half of all the berries sold. The surface of the meadow is pared, the sods and all stumps and roots being removed, and then covered with sand to

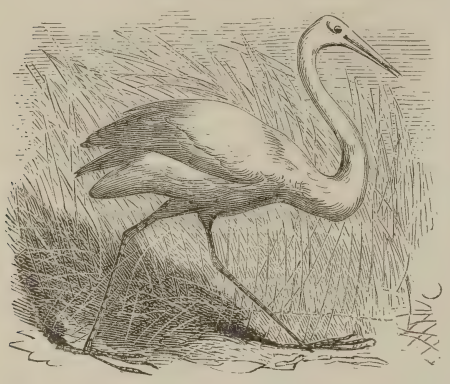
the depth of two to six inches, according as the muck is deep or shallow. Cultivators attach much importance to the quality of the sand used to cover the meadow; it should be as free as possible from clay or vegetable matter, and from the seeds of weeds. Sand serves a twofold purpose: it affords a genial medium in which the newly set plants can strike root, and it keeps down the growth of such plants as would otherwise spring from the muck. The sanding being completed, the vines are then planted. These should be chosen with great care, some of them being unfruitful; the best may be distinguished by the wiry texture of the wood and the greenish brown color of the leaves. The poorer plants are more vigorous, brighter, greener, and have a more bushy foliage than the best. The vines should be planted in the spring, or in the autumn if the "patch" can be well flooded in winter. The transferring of the sods which bear the vines is not a good practice. A better method is to use cuttings from four to six inches long, the middle of which is covered in the soil, and the ends left projecting; or two or three cuttings may be planted together with a dibble. Vines have been cut into pieces two or three inches long by a common hay cutter, sown broadcast, and harrowed in. Propagation from seed is not to be depended on, the seed not germinating readily except in favorable localities; the seedlings are easily injured; there is much loss of time; and even in the third year little fruit is borne. The vines should be planted in rows two feet apart. The weeds should be kept down for two seasons, after which the vines will begin to take full possession of the soil. Cranberry vines are sometimes burned (but not when the ground is very dry) to destroy the worm. Flooding is also a remedy for this. The fruit ripens in the vicinity of New York about the middle of October. The persons who pick the berries are usually paid by the bushel. The vines should be picked clean. When gathered before they are ripe (as is sometimes done to save them from frost), or if the dew be on them, they do not keep well. The cranberry rake may sometimes be used to advantage; it is made of bent sheet iron, whose lower edge is a row of teeth shaped like the letter V; when drawn over the ground the plants escape, but the fruit is gathered. The berries may be rolled over an inclined plane to separate the good from the bad. Leaves, straws, and prematurely ripe or diseased fruit should be removed. Cranberries for Europe are packed in water in small kegs, and sometimes in sealed bottles filled with water. The Indians used cranberry poultices to extract the venom from wounds made by poisoned arrows; they are also a popular remedy for erysipelas.

CRANBROOK, Gathorne Hardy, viscount. See supplement.

CRANCH. I. William, an American jurist, born in Weymouth, Mass., July 17, 1769, died in Washington, Sept. 1, 1855. He graduated at Harvard college in 1787, and was admitted to the bar in July, 1790. In 1800 he was appointed one of the commissioners of public buildings, and on Feb. 27, 1801, was nominated as one of the assistant judges of the United States circuit court for the District of Columbia. In 1805 he was appointed chief justice of the court, and held the office until his death. In all this period of time only two of his decisions were overruled. His reports of the decisions of the United States supreme court, and of the circuit court of the District of Columbia from 1801 to 1841, are well known. His legal acquirements were extraordinary, and he studied his cases with a patience and research that never grew weary. Among the last services imposed upon him by congress was the final hearing of patent causes after an appeal from the commissioner of patents. **II. Christopher Pearse,** an American artist and poet, son of the preceding, born at Alexandria, Va., March 8, 1813. He graduated at Columbian college in Washington in 1831, studied for three years in the divinity school of Harvard university, and became a licentiate, but in 1842 devoted himself to landscape painting. He resided in New York in the practice of his art from that time till 1846, when he visited Italy for two years. He went again to Europe in 1853, and lived in Paris and in Italy for ten years, executing many landscapes, of which those devoted to Swiss and Italian scenery have been specially admired. After his return from Europe he resided some time at Fishkill on the Hudson, and now lives on Staten Island. Besides frequent contributions to periodical literature, he has published a volume of poems (1854); "The Last of the Huggermuggers" (1856) and "Kobboltozo" (1857), tales for children illustrated by himself; and a translation of the Æneid into blank verse (1872).

CRANE, a wading bird of the order *grallatores*, suborder *herodiones*, and family *gruidæ*. In this family are included the genera *grus*, *scops*, and *Balearica*. The genus *grus*, which includes the typical cranes, has the bill longer than the head, straight, sharp-pointed, compressed on the sides, and slightly curved at the tip; the wings are long, the tertials lengthened and pendent; tail short; tarsi very long and slender, covered with transverse scales; toes rather short, the outer united at the base to the middle one, the lateral ones equal; hind toe short and elevated; claws short and strong. The cranes are large birds, frequenting marshes, muddy flats, and cultivated and open plains, migrating to warm climates in winter, and returning to the north to breed. They fly usually at night in large flocks, following a leader in two diverging lines, at a great elevation, and sometimes uttering loud cries. Their food consists of reptiles, fish, mice, and other small animals, insects, seeds, roots, and grain. The common crane of Europe is *G. cinereus* (Bechst.). The American crane (*G. Americanus*, Ord) is a good example of the genus. It has the bill

dusky, and yellow toward the base; the head small, neck very long, body rather slender, tibia bare to a large extent; the bare parts on the top and sides of the head carmine, with



American Crane (Grus Americanus).

small black hairs; feet black; plumage pure white except the primaries and their coverts, which are brownish black. The length to the end of the tail is 54 inches, and to the end of the claws 65; extent of wings 92, bill 5½, tarsus about 11 inches. Young birds are of bluish gray color, with the feathers tipped and margined with yellowish brown, and the abdomen grayish blue; in this state the bird was described as *G. Canadensis*. This species, called whooping crane from the loud noise it makes, is by some considered specifically distinct from the true *G. Canadensis* (Temm.), to which the name of sand-hill crane has been given. The cranes are found in the western and southern



Crowned Crane (Balearica pavonina).

states from the middle of October until about the middle of April, when they retire to the north. They are very shy, and difficult to approach from the acuteness of their sight and hearing; when wounded, they should be approached with caution, to avoid the blows of their sharp and powerful bills. They roost either on the ground or on high trees, according to circumstances. The nests are made among the high grass, of coarse materials, flat, about 18 inches in diameter, but little elevated above the surface; the eggs are two in number, bluish white, and are sat upon by both birds. They become gentle in captivity, feeding on vegetable substances.—The genus *scops* embraces the Numidian crane (*S. virgo*, Linn.), ash-colored, with a black neck, and two white tufts of elongated slender feathers covering the ear; this is often kept in captivity, and is quite gentle. The genus *Balearica*, peculiar to Africa and the islands of the Mediterranean, has the bill shorter than the head, thick and strong; the cheeks are naked, and the base of the bill and the throat beneath are wattled. The crowned crane (*B. pavonina*, Linn.) is a slender, graceful bird, about 4 ft. high, ash-colored, with a black belly, white wings, and fulvous rump; the naked cheeks are bright rose color, and the hind head is crowned with a tuft of yellow feathers or hairs, resembling the flower stems of broom corn, which may be extended at pleasure; it is often kept in captivity for its beauty and docility; its voice is remarkably shrill. In its wild state it feeds on fish.

CRANE, a machine for raising heavy weights, and moving them short distances. In its simplest form it consists of an upright post with a horizontal beam called a jib, framed in or near its top, and braced by a stick called a stay, which is framed in the post and the jib. It is held upright, with freedom to turn round, by a pin in each end of the post, one working upon a solid support below, and the other in a beam above; or the upper support may be in a collar encircling the post and secured to a stationary object, as a wall or another post. A pulley is set in or suspended from the further extremity of the jib, by which the weight is taken up, the fall of the tackle passing around the drum of a winch attached to the lower end of the post. Such cranes are employed in founderies and upon piers, where large blocks of stone or other heavy materials are shipped or unshipped, and are set upon some barges to be always at hand for moving their heavy freight. Their construction is, however, generally a modification of the simple form described. The horizontal jib has often a narrow rail upon its top, upon which a flanged wheel traverses, supporting the pulley. This admits of the weight being brought nearer to the post, so that it may be placed upon any part of the circular area included in the sweep of the jib. Cranes are often made with the jib set at an inclination of 45° or thereabouts, and stepped at its lower end in a framework of iron, which carries also the winch, and may be turned around the post which it encircles. In these the foot of the post is set strongly in mason work, and no support is required to steady it at top. The

jib is kept up by tension bars placed above it and extending horizontally from its extreme end to the top of the post. Cast iron has been much employed for some years, instead of timber, for the construction of cranes; and Mr. Fairbairn of England introduced the use of plates of wrought iron, riveted together and arranged in tubular form, on the principle adopted in the building of the Britannia tubular bridge.—The power employed to work cranes is usually that of men turning the winch. In some situations they are conveniently connected with machinery running by steam or other power, and their movements are controlled by a lever brought to bear with as much friction as may be required upon the barrel of the winch by a rope held in the hand of the man who manages the machine. They have also been made to work by the pressure of a column of water upon a movable piston, a valve in the supply pipe being used to control the movement. Steam also has been applied to work a small engine connected directly with the barrel of the winch. The most powerful cranes ever built are those contrived by Mr. Albert Bishop of New York, and generally known as Bishop's boom derrick. Derrick is a name commonly applied to cranes on shipboard and elsewhere. The construction of an ordinary crane is represented in the article CASTING, fig. 3.—What is known as a travelling crane, used in heavy founderies and machine shops, is not strictly a crane, but a suspension bridge, supported at either end upon trucks which move upon securely supported tracks at a sufficient elevation above the floor, and at the sides of the room. Upon the bridge there is also a track upon which a car travels, from which are suspended chains for hoisting. A windlass upon the car furnishes the motive power. As the bridge moves from end to end of the room, and the car upon it, across, the latter may be placed immediately over objects to be raised.

CRANE, Anne Moncure (SEEMÜLLER), an American novelist, born in Baltimore, Jan. 7, 1838, died in Stuttgart, Germany, Dec. 10, 1872. Her first novel, "Emily Chester" (Boston, 1864), was anonymous. She afterward published two others, "Opportunity" (1867) and "Reginald Archer" (1871). She also wrote much for periodicals, and a collection of her miscellaneous writings is announced for publication (1873). In 1869 she married Mr. Augustus Seemüller, and in 1871 went to Europe in the hope of deriving benefit from the medicinal waters of Germany, but did not live to return home.

CRANMER, Thomas, the first Protestant archbishop of Canterbury, born at Aslacton, Nottinghamshire, July 2, 1489, burned at the stake in Oxford, March 21, 1556. His family was ancient and respectable. At the age of 14 he was sent to Jesus college, Cambridge, where he applied himself to the study of Hebrew, Greek, and theology. In 1510 or 1511 he was chosen to a fellowship, which he forfeited by marrying. He then became lecturer in Buckingham (now Magdalen) college; but his wife dying within a year, he was restored to his fellowship, and in 1523 received the degree of D. D. In 1529 Henry VIII., wishing a divorce from Catharine of Aragon that he might marry Anne Boleyn, asked the opinion of many learned men, among whom was Cranmer, whether his marriage with the widow of his brother, for which the pope had granted a dispensation, was a valid one according to the Bible and the canon law. Cranmer answered that the question should be decided from the Bible; that the divines of the English universities were as well fitted to give judgment as those of Rome or any foreign country; and that both the king and the pope would be bound to abide by their decision. Henry said that Cranmer had "got the right sow by the ear;" and Cranmer was summoned to court, made a royal chaplain, received some benefices, and was appointed to a place in the household of Lord Wiltshire, the father of Anne Boleyn, where he was to prepare an argument on the question. The conclusion of the argument was that a marriage with a brother's widow was condemned by the Bible, the councils, and the fathers. The Oxford divines favored his view, while most of those of Cambridge dissented; many of the continental divines sided with Cranmer. In 1530 he accompanied Lord Wiltshire and others on an embassy to the emperor Charles V. and the pope. Clement VII. had for months resisted all solicitations to pronounce judgment on the question of the divorce, but had at length been induced by the emperor, the kinsman of Catharine, to sign a brief forbidding Henry to marry before the publication of his sentence. On the arrival of the ambassadors the operation of the brief was suspended, and the pope promised to do whatsoever his conscience would permit in favor of Henry. Cranmer went to Germany for the purpose of working on the minds of the Lutheran clergy; he became converted to their doctrines, and married the niece of Osiander, one of the leading reformers. Returning to England, he was made archbishop of Canterbury in 1533. He immediately proceeded with the divorce, and declared the marriage between Henry and Catharine null and void from the beginning. He did not perform the marriage ceremony between Henry and Anne; but he delivered the crown and sceptre to Anne at her coronation, June 1, 1533. The pope having excommunicated Henry, Cranmer became an active agent in the reformation. When Anne was arrested on charge of adultery, May 2, 1536, Cranmer was ordered to go to his episcopal palace, and there to remain. At first he was disposed to show some spirit, and wrote a letter to Henry which was not unfavorable to Anne; but before the letter was sent he had an interwiew with some of the officers of the crown, which

caused him to add a postscript to the effect that he was persuaded of the queen's guilt. After the trial and condemnation of Anne she was taken to Lambeth, where Cranmer, sitting in judgment, pronounced her marriage null and void from the first. The archbishop had his share in the persecutions that were carried on by Henry, and in some instances took part in sending to death persons who believed what he himself soon afterward came to profess. When the power of all the prelates in the kingdom was suspended by Thomas Cromwell in his capacity of vicar general, Cranmer set the example of submission, having previously contended that the king alone had the power of appointing spiritual officers. The suppression of the monasteries was supported by him, but he was desirous that some of the property seized should be used for the purposes of religion and education. In 1534 he carried through the convocation a resolution that the Bible should be translated, and the volume appeared in 1540, Cranmer's portrait being conspicuous in the frontispiece. Through his influence the creed, the Lord's prayer, and the commandments were taught in English. In 1539 the famous "six articles" were adopted, in opposition to Cranmer's advice and exertions. He was married, and the third article declared that it was not permitted to priests to marry and have wives after ordination. On this point Cranmer contended strongly, but Henry would not abandon his purpose. Cranmer submitted, and sent his wife and children to Germany. Anne Boleyn was executed May 19, 1536, and the next day Henry was married to Jane Seymour, who died soon after; and in January, 1540, the king married Anne of Cleves. Cranmer favored the latter marriage, received Anne upon her arrival in England, and six months afterward declared the marriage invalid. It was Cranmer who in 1541 informed Henry of the alleged criminality of his fifth queen, Catharine Howard. When Henry died, in 1547, Cranmer was by the royal will appointed a member of the council of regency which was to rule during the minority of Edward VI., who was only nine years old. During the "boy king's" life Cranmer's influence was great, and was directed to the establishment of that ecclesiastical polity which has ever since endured in England, with the brief interval of Mary's reign. He bore a prominent part in the legal murder of Lord Seymour of Sudely, at the instigation of that lord's brother, the protector Somerset. In the harsh treatment of the Catholic prelates he was the principal agent. When it was found necessary to overcome Edward's repugnance to the burning of heretics, Cranmer was employed to satisfy his scruples. He sentenced persons to the stake for the very opposite belief to that for which he had taken part in condemning others in the reign of Henry. When Edward resolved to leave the crown to Jane Grey, Cranmer was reluctantly induced to sanction the act. He adhered faithfully to her, and fell with her. He had nothing to hope from Mary, and his last official act was to serve at the funeral of Edward. The next day, Aug. 9, 1553, he was ordered to confine himself to his palace at Lambeth. Having some time later written a declaration against the mass, he was summoned before the council, and committed to the tower, on the charges of treason and sedition. He was attainted by parliament, but it was resolved to proceed against him for heresy alone, and he was sent down to Oxford with Latimer and Ridley, to go through the form of disputing with Catholics on the contested points of religion. All were condemned, though the Protestants were not so much as heard. To the demand of the commissioners before whom they were then taken, whether they would return to the old faith, they answered in the negative. Cranmer was then cited to appear at Rome within 80 days, and as he could not do so, he was condemned as contumacious. At first he was firm, but the fear of death overcame him, and he recanted over and over again, without avail. Mary hated him because of what he had done against her mother and herself, and Gardiner and Bonner hated him because of the personal oppression they had suffered at his hands. Both queen and bishops were resolved upon his degradation, and equally that it should not save his life. He was ordered to prepare for death; whereupon he declared that his recantation had been freely made, and begged for a short delay in order to give further proof of his repentance. This granted, he made his last confession, in which he declared that he had been the greatest of persecutors, compared himself to the penitent thief, and concluded by humbly begging pardon; but on March 21, 1556, he was directed to prepare himself for the stake. A paper consisting of an abstract of his recantations was given him, which he was to read at the stake. He transcribed and signed it, and kept a copy, which he altered, and made a disavowal of all his recantations. After listening to a sermon he avowed himself a Protestant, saying he died in his former faith, believing neither in the papal supremacy nor transubstantiation; and declared that the hand which had signed his recantations should first burn. He was burned opposite Balliol college, and when the flames were rising around him he thrust his right hand into them, and is said to have held it there until it was consumed, crying aloud: "This hand hath offended—this unworthy right hand." He died repeating the words, "Lord Jesus, receive my spirit!"—The principal authorities for the career of Cranmer are Strype's "Memorials," the "Lives" by Todd and Le Bas, and the historical works of Burnet, Lingard, Turner, Hallam, Macaulay, and Froude.

CRANTOR OF SOLI, an academic philosopher and the first commentator on Plato, flourished at the close of the 4th century B. C. He studied under Xenocrates, and was the author of sev-

eral works, all of which have perished. Most of his writings related to ethical or metaphysical subjects. One of his most celebrated productions was a treatise "On Grief" (*Περί Πένθους*), of which Cicero made liberal use in his "Tusculan Questions," and in the *Consolatio*, composed by him on the death of his daughter.

CRANWORTH, Robert Monsey Rolfe, baron, lord chancellor of England, born at Cranworth in Norfolk, Dec. 18, 1790, died in London, July 24, 1868. He was educated at Cambridge university, and in 1816 was called to the bar. From 1832 to 1839 he was member of parliament for Penryn. In 1834 he was appointed solicitor general, and again in 1835, retaining the office till 1839, when he was made one of the barons of the exchequer. In 1850 he was appointed vice chancellor and raised to the peerage as Baron Cranworth, and in 1851 became lord justice of appeal in chancery. In December, 1852, he was appointed lord chancellor, and held the great seal until the formation of the Derby ministry in 1858, when he retired. In 1865–'6 he again held the office of chancellor under Lord Palmerston.

CRANZ, David, a German missionary and historian, born in Pomerania in 1723, died at Gnadenfrei, Silesia, June 6, 1777. He became in 1747 secretary to Count Zinzendorf, entered a community of Moravians, went in 1761 as missionary to Greenland, and after his return in 1766 was successively pastor at Rixdorf and at Gnadenfrei. He wrote *Historie von Grönland* (Barby, 1765; 2d ed., with additions, 1770), and *Brüder-Historie*, or history of the Moravian Brethren (1771; continued by Hegner, 1791–1816).

CRAPE (Fr. *crêpe*, from Lat. *crispus*, crisp), a delicate transparent fabric, made of raw silk, used chiefly in mourning. Crapes are either crisped or smooth. The crisped which are double require that the silk should be spun harder than for the single, as the degree of twist regulates the crisping. In Europe crape was first made at Bologna. In France crapes are mainly produced at Lyons, where the manufacture was introduced about the middle of the 17th century. In England they are manufactured at Norwich and Yarmouth. China crape, a quite different fabric, for a long time baffled all attempts at imitation, but the process of manufacture was at last discovered by M. Dugas of St. Chamond, France.

CRASHAW, Richard, an English poet and divine, born in London, died in Loretto, Italy, about 1650. The son of an Anglican clergyman, he was educated at the Charterhouse, London, and Pembroke hall, Cambridge, where he graduated in 1633, and became fellow of Peterhouse in 1637. In 1634 he published anonymously at Cambridge a volume of Latin poems under the title of *Epigrammata Sacra*, in which occurs the celebrated verse on the miracle at Cana:

Lympha pudica Deum vidit et erubuit.
(The modest water saw its God and blushed.)

The English verse (which often has "conscious" instead of "modest") has been attributed also to Milton and Dryden. Crashaw was afterward admitted to holy orders, and lived for several years in St. Mary's church, near his college, occupied with religious offices, and with composing devotional poems, and was noted as an eloquent preacher. In 1644, for refusing to accept the covenant, he was ejected from his fellowship, and removed to Paris, where he became a Roman Catholic. Cowley sought him there in 1646, and finding him in great poverty obtained for him the favor of Queen Henrietta Maria, who gave him letters of recommendation to dignitaries of the church in Italy. He went to Rome, and became successively secretary to one of the cardinals, and a canon in the church of Loretto. His English poems, entitled "Steps to the Temple, Sacred Poems, with other Delights of the Muses," were published in London in 1646. A posthumous volume appeared at Paris in 1652 under the title *Carmen Deo nostro*. Several of his pieces are admirable translations from Latin and Italian. His poems are remarkable for the beauty, force, and passion with which they treat religious subjects. He has also left some miscellaneous poems of great beauty. One of the finest of Cowley's compositions is a monody on his death. Editions of his collected works appeared in 1670 and 1785. His complete works, edited by W. B. Turnbull, were published in London in 1858.

CRASSUS. I. Lucius Licinius, a Roman orator, born in 140 B. C., died in 91. He was educated with great care for the forum, entered into political life at a very early age, and when only 21 distinguished himself by the successful prosecution of C. Carbo on a criminal charge, the nature of which is unknown. Carbo escaped conviction by suicide. Crassus now engaged in several other important suits, and pursued his forensic career with great success. In 114 he met with almost his first defeat, in failing to secure the acquittal of his relative Licinia, a vestal, who was accused of unnatural crimes. Soon after this he was appointed quæstor, and he afterward filled successively all the Roman offices, Q. Mucius Scævola being always his colleague except in the tribunate of the people and the censorship. During the years when he was not in office he continued to distinguish himself in the forum. As quæstor he seems to have had Asia as his province, and on his return from it he visited Athens. As curule ædile (103) he gave magnificent games for the people. As consul (95) he contributed to the enacting of a law expelling all allies, not citizens of Rome, from the city, which rigorous measure was one of the sources of the social war. Sent as proconsul to the province of Cisalpine Gaul, his administration was distinguished for strict justice. While censor in 92 he caused the schools of the Latin rhetoricians to be closed, as pernicious to the morals of the people.

Shortly before his death he vehemently defended the laws proposed by the tribune M. Livius Drusus against L. M. Philippus, one of the consuls. Crassus was fond of elegance and luxury; his house on the Palatine hill was remarkable for its splendor, and adorned with works of art. In Cicero's *De Oratore* he figures as one of the speakers, and is supposed to express the opinions of the author. **II. Marcus Licinius,** one of the first Roman triumvirate, born about 105 B. C., killed near Carrhæ in Mesopotamia in 53. He belonged to a different family from that of the preceding, several members of which had attained high honors in the republic, and borne the surname of *Dives* (rich). His father, who was consul and censor, was in the civil war a zealous partisan of Sulla, and died by his own hand after the victorious return of Marius and Cinna in 87. Young Crassus escaped to Spain, whence he went to Africa after the death of Cinna, and from there to Italy (83) to fight against the Marian party. Enriched with the spoils of the defeated and proscribed party, his avaricious and speculative spirit found ample means to augment his wealth by purchases at auction, by farming, mining, and letting out houses and slaves, and thus fully to deserve the family surname. His riches and hospitality gave him influence and favor with the people, which paved his way to civil and military distinctions, though he was possessed of no remarkable talents. In 71 he was prætor, and received the command against the revolted slaves under Spartacus; he rapidly raised six legions, and defeated the gladiator in a bloody battle on the river Silarus, in which Spartacus was slain. Crassus received an ovation, being crowned, as conqueror of slaves, with a wreath of laurel instead of myrtle, and was elected, together with Pompey, consul for the following year. Rivalling the influence of his great colleague, he bribed the people of Rome by extraordinary banquets and distributions of corn; but he was finally reconciled with Pompey, and united with him and Cæsar in forming the first triumvirate (60 B. C.). Cæsar, who received the province of Gaul, lulled by some minor undertakings the attention of his colleagues, who supported him by the influence of their fame and wealth. The compact was renewed, and Crassus was again elected with Pompey consul for the year 55. According to the new terms, Cæsar was to continue his government in Gaul, Pompey received Spain, and Crassus Syria. Lavish preparations betrayed his intention of entering upon a great expedition against the Parthians, which promised to become a source of boundless conquests and riches. In anticipation of these, his joy is said to have been childish; and the opposition of the tribunes, as well as various omens which alarmed the people, could not deter him from his undertaking. He marched through Macedonia and Thrace to Asia, crossed the Euphrates in 54, and laid waste Mesopotamia, but returned to Syria, where he spent the winter, before starting on a new campaign in 53. He recrossed the Euphrates, following the false advice of an Arabian chief, and was attacked by Surena, the general of Orodes, king of the Parthians, near Carrhæ, supposed to be the Biblical Haran. The Romans were defeated with immense slaughter. Crassus retreated to the town, but was compelled by a mutiny of the soldiers to accept the invitation of the enemy to a conference, on the way to which he was treacherously killed. The circumstances of this event are variously related. His head was sent to the Parthian king, who poured into his mouth melted gold, saying, "Now be satiated with what thou covetedst through life."

CRATERUS, a favorite general of Alexander the Great, killed in 321 B. C. When Alexander died in 323 Craterus was on his way to Macedonia, of which he was to be regent, in place of Antipater, then regent, who was to lead reënforcements to Asia. In the distribution of the empire, these two received in common the government of Macedonia, Greece, Illyria, and a part of Epirus; Antipater commanding the army, and Craterus exercising the civil functions. They acted in harmony in the Lamian war, in that against the Ætolians, and finally against Perdiccas in Egypt and Eumenes in Cappadocia. Craterus fell in a battle with Eumenes.

CRATES. I. A comic poet of Athens, flourished about 440 B. C. Eminent as an actor, he often performed the principal parts in the plays of Cratinus. As a comic poet he was the first Athenian who ventured to bring drunken characters on the stage. Little is known of his works. The titles of 14 are given, of 8 of which there are extant fragments. **II.** A Cynic philosopher, born at Thebes, flourished about 320 B. C. He early removed to Athens, where he became the pupil of Diogenes, and afterward one of the most eminent in that school of philosophers. According to Diogenes Laërtius, he lived a Cynic of the straitest sort. Fearing that the quiet of philosophical pursuits would be disturbed by the cares of wealth, of which he had an abundance, he is said to have thrown his money into the sea; but according to another account, he placed it in the hands of a banker, with the condition that if his sons should have the misfortune to be fools they should inherit the property, and that otherwise it should be distributed to the poor. "For," said Crates, "if they are philosophers, they will not need it." He wrote a book of philosophical letters, which Laërtius compares with those of Plato, and also tragedies and smaller poems, none of which are extant. His life was written by Plutarch, but this has also been lost. **III.** An Athenian philosopher, the pupil and friend of Polemo, and his successor in the chair of the academy, flourished about 270 B. C. He contributed little to the progress of philosophical investigation, and is known mainly as the in-

structor of Arcesilaus and others. **IV.** A Greek grammarian, called also by Suidas a Stoic philosopher, founded about the middle of the 2d century B. C. the celebrated Pergamene school of grammar, and became the great rival of Aristarchus, of the Alexandrian school. From his work on Homer he is said to have been called Ὁμηρικός. He wrote commentaries on Hesiod, Euripides, and Aristophanes. Only a few fragments of his works are preserved.

CRATINUS. I. A comic poet of Athens, mentioned by Quintilian and Horace as one of the three great masters of the old comedy, born in Attica in 519 B. C., died in 422. His private life was marked by irregularities and excesses. Suidas calls him the "wine-bibber," as Aristophanes and Horace had done before him. He was already far advanced in life before he entered upon his dramatic career. The "Archilochi," supposed to have been one of his earliest productions, was not exhibited till he was upward of 70 years of age; but he lived to achieve much for his profession, and at the advanced age of 97 died at the height of his fame, having just triumphed over Aristophanes himself. He found the Greek comedy a mere plaything, employed to excite merriment and laughter, and at once converted it into a terrible weapon for the chastisement of public and private vice. Horace particularly commends the public spirit and the impartial justice with which he exercised his censorship over the morals of his age. The uniform testimony of ancient writers places Cratinus in the first rank as a comic poet. His great rival, Aristophanes, was fully aware of his power. In the "Knights" he compares him to a torrent carrying everything before it, and tells his fellow citizens that Cratinus was entitled to a high place in their regard, to a choice seat at the Dionysia, and to a public support in the Prytaneum. About 30 plays are ascribed to him, but some of these probably belong to the younger Cratinus; according to the best authorities he wrote 24 dramas, 9 of which were successful in the Dionysiac contest. Not a single one of his dramas is now extant; only a few fragments remain to attest the excellence of his productions. **II.** A poet of the middle comedy, who flourished about 330 B. C. He is sometimes confounded with his more celebrated namesake. Four or five plays ascribed to him are considered authentic, besides which he probably wrote some of those wrongly ascribed to the elder Cratinus.

CRATIPPUS. I. A Greek historian, contemporary with Thucydides, about 400 B. C. He continued the work of the great historian, and brought it down, according to Plutarch, to the time of Conon. The well known words of Dionysius, "He wrote what Thucydides left unwritten," evidently show that Cratippus not only continued the history of Thucydides, but also supplied whatever omissions he thought he found in it. **II.** A celebrated Peripatetic philosopher. He was born about 75 B. C., at Mytilene, on the island of Lesbos, where he established a school of philosophy; but afterward having repaired to Athens, he became the instructor of Brutus and of M. Cicero, the son of the great Roman orator. Cicero himself pronounces high encomiums upon him in the *De Officiis*, declaring him the ablest of the Peripatetics whom he had ever known, and equal at least to the best of the school. Though highly esteemed by the ancients, he probably never produced any important philosophical work. Cicero tells us that he believed in inspiration and in dreams, but rejected all other kinds of divination. He is supposed to have been the author of the work on dreams cited by Tertullian in his work *De Anima*.

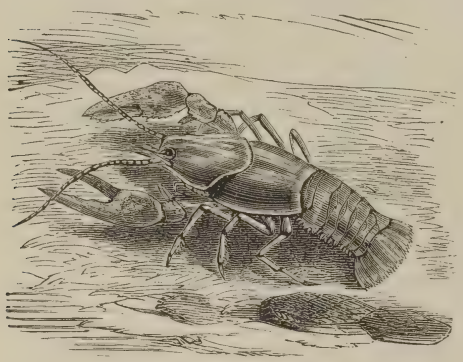
CRAUFURD, Quintin, a Scottish author, born at Kilwinning, Sept. 22, 1743, died in Paris in November, 1819. He went in early life to the East Indies, where he served in the war against Spain. After the peace he became president of the company of the Indies at Manila, and gained a considerable fortune. Returning to Europe in 1780, he established himself at Paris, where he formed valuable collections of books and paintings. He left France at the revolution, but returned at its close, in order to restore his collections, which had been dispersed and sold in his absence. After the rupture of the peace of Amiens he was allowed to remain in Paris, through the protection of Talleyrand and the empress Josephine. He was the author of a "History of the Bastile, with a Disquisition upon the Prisoner of the Iron Mask," "Essays on French Literature," "Historical Essay on Swift and his Influence on the English Government," "Sketches relating to the History, Learning, Religion, and Manners of the Hindoos," and other works, some in English and some in French.

CRAVEN, a S. E. county of North Carolina; area estimated at 1,000 sq. m.; pop. in 1870, 20,516, of whom 12,116 were colored. It borders on Pamlico sound, and is intersected by the Neuse river, navigable throughout the county. The surface is low, swampy, and in great part covered with pine forests, the turpentine and lumber procured from which are among the chief articles of export. The Atlantic and North Carolina railroad traverses it. The chief productions in 1870 were 3,310 bushels of wheat, 241,034 of Indian corn, 112,217 of sweet potatoes, 3,809 bales of cotton, and 55,386 lbs. of rice. There were 897 horses, 2,484 milch cows, 5,810 other cattle, 4,203 sheep, and 15,431 swine; 2 flour and 8 saw mills, 2 manufactories of agricultural implements, and 5 of tar and turpentine. Capital, New Berne.

CRAVEN, Elizabeth. See ANSPACH.

CRAWFISH, a macrourous or long-tailed crustacean, of the order *decapoda* and genus *astacus*. This genus is fluviatile, while the lobster, belonging to the same family but to the genus *homarus*, is marine. The body is elongated and somewhat compressed, and the abdomen

large; it is covered by a corneous envelope or carapace, terminating anteriorly in a wide, short, flattened beak, which covers the base of the eye pedicles. There are two pairs of antennæ: the first pair of moderate length, with two terminal filaments; the external, or second pair, being much longer, with a large lamellar appendage on the upper surface of its pedicle. The mouth apparatus consists of two mandibles, two pairs of jaws, and three pairs of jaw feet, moving horizontally. The legs are five pairs, the first the largest, and ending in a two-bladed nipper or claw, by which objects are seized in the pursuit of prey and in self-defence; the second and third pairs are also didactylous, but smaller, and the fourth and fifth are single-pointed. The fifth thoracic ring is simply articulated to the preceding ones. The abdomen is of about the same width for its whole length, presenting on each side a series of laminæ prolonged so as to encase more or less the base of the false or swimming



Crawfish (Astacus fluviatilis).

feet; the last segment is very wide, forming, with the two laminæ from the sixth ring on each side, a large caudal fin, nearly even when expanded, the external plate having a transverse joint at its posterior third, the middle plate being round at the end, with a tooth on each side posteriorly. The sternum forms no plastron, as in the crab; the pincers of the first pair of feet are not so large in proportion, and are without the angle seen in the lobster. The swimming feet are five pairs, long and narrow; in the females all end in wide leaf-like plates, with ciliated edges; in the males the first pair are styliform. The gills are very numerous, disposed in tufts, and arranged in rows at the base of the walking feet, and within the carapace; they are separated by cartilaginous plates, whose motions serve to introduce and expel the water, which issues at an aperture on each side of the mouth. According to Milne-Edwards, the duodenum has a great number of internal villosities, no valve between it and the rectum, the latter smooth, and no cæcal appendage, the opposite of which is the case in the lobster. The eyes have compound facets, and are supported on movable pedicles arising from the first segment of the head, and may be in a measure withdrawn into cavities answering the purposes of orbits. The organs of generation are distinct in the two sexes; the number of eggs is very great, and they are carried for a time attached to the false feet, under the tail. Like other decapods, the crawfish changes its shell annually, coming out with a new and tender one, which becomes hard in a few days; at each moult the animal increases considerably in size, and the change appears to be continued through life; the shell, which is an epidermic covering, consists of chitine united to calcareous salts. This genus also has the power of reproducing claws and feet which have been lost by accident. Their food is almost exclusively animal, both living and dead matter being eagerly devoured; fish, mollusks, aquatic larvæ, terrestrial insects, and sometimes their own species, form the principal sources of their subsistence. Their enemies are also many; mammals frequenting the water, aquatic birds, voracious fishes, and even insect larvæ, destroy great numbers of them, especially in their young state. They are considered luxuries on the table, and are used by fishermen as bait; they are caught in nets, and may be easily taken from holes and under stones. In some of the Russian rivers they attain a large size, and are caught for the calcareous masses in their stomachs, which have been used to correct stomachal acidity. (See Crab Stones.) They delight in clear and running streams, but are common in lakes and ponds; they conceal themselves by day, and feed by night. The color is generally a light yellowish brown. The European crawfish (*A. fluviatilis*, Fabr.) has the large claws studded with granulations, and the beak with a tooth on the side near its internal third. Among the American species are the *A. affinis* (Say) and *A. Bartonii* (Bosc.), found in the southern and western rivers; in these the claws and the carapace are less granular. Other species are described in South America and Australia by Milne-Edwards. Crawfish swim rapidly by means of the tail, whose strokes propel them backward; they crawl well on the bottom, and are sometimes seen at a considerable distance from streams, using holes filled with water, and occasional pools, as places of retreat. From their propensity to eat carrion, Audubon calls them "little aquatic vultures." They are fond of burrowing in the mud, and from this habit are often great pests, undermining levees and embankments. In the Mammoth cave of Kentucky some of the crawfish are blind; they have the eye pedicles, but no facets, only simple integuments covered with hairs; very probably, as in the case of the blind fish of the same cave (*amblyopsis spelæus*), internal rudiments of a visual organ will be found, especially as it is said that some of these crustacea have well developed eyes, as also do the crickets which live in the cave.

CRAWFORD, the name of 11 counties in the United States. **I.** A N. W. county of Pennsylvania, bordering on Ohio, intersected by a number of creeks, including French creek or Venango river; area, 975 sq. m.; pop. in 1870, 63,832. It has an undulating surface, and a soil of good quality, but better adapted to grazing than to tillage. Iron ore and lime marl are found in considerable quantities. Lumber is abundant, and forms one of the chief articles of export. Grain, potatoes, hay, and dairy produce are the other staples. It is traversed by the Beaver and Erie canal, the Oil Creek and Alleghany River railroad, the Atlantic and Great Western, the Franklin branch, and the Erie and Pittsburgh railroad. The chief productions in 1870 were 257,249 bushels of wheat, 26,537 of rye, 571,538 of Indian corn, 924,392 of oats, 73,134 of buckwheat, 293,750 of potatoes, 102,181 tons of hay, 196,039 lbs. of cheese, 2,046,252 of butter, 230,664 of wool, 99,562 of maple sugar, and 30,480 of hops. There were 13,911 horses, 24,247 milch cows, 24,640 other cattle, 59,954 sheep, and 14,685 swine; 8 establishments for the rectification of petroleum, 13 manufactories of machinery, 41 of carriages and wagons, 8 of cheese, 56 of cooperage, 2 of explosive fireworks, 17 of furniture, 5 of iron castings, 5 of sashes, doors, and blinds, 23 of tin, copper, and sheet-iron ware, 4 of woollen goods, 12 flour mills, 21 tanneries, 19 currying establishments, 8 breweries, 9 planing and 95 saw mills, 5 manufactories of agricultural implements, 7 of bricks, 20 of saddlery and harness, and 9 of cigars. Capital, Meadville. **II.** A S. W. central county of Georgia, bounded N. E. by Echeconnee creek, S. W. by Flint river, and drained by several creeks; area, 289 sq. m.; pop. in 1870, 7,557, of whom 4,273 were colored. The surface is uneven; the N. part is moderately fertile, producing cotton, grain, and sweet potatoes; the S. sterile, and covered with pine forests. The Southwestern railroad passes through its S. part. The chief productions in 1870 were 5,406 bushels of wheat, 116,326 of Indian corn, 3,558 of oats, 15,896 of sweet potatoes, and 4,720 bales of cotton. There were 403 horses, 973 mules and asses, 1,257 milch cows, 2,044 other cattle, and 7,236 swine. Capital, Knoxville. **III.** A W. county of Arkansas, bordering on the Indian territory, and bounded S. by the Arkansas river, which is navigable by steamboats; area, 585 sq. m.; pop. in 1870, 8,957, of whom 988 were colored. The surface is mountainous. Boston mountain, 2,000 ft. high, is in the county. Coal and other minerals are found. The chief productions in 1870 were 9,746 bushels of wheat, 237,702 of Indian corn, 13,448 of Irish and 12,638 of sweet potatoes, 2,366 bales of cotton, 61,863 lbs. of butter, and 6,241 gallons of molasses. There were 2,617 horses, 1,736 milch cows, 3,989 other cattle, 2,724 sheep, and 16,586 swine. Capital, Van Buren. **IV.** A N. county of Ohio; area, 412 sq. m.; pop. in 1870, 25,556. The surface is level, and the soil fertile. The S. portion is principally devoted to grazing, the N. to the production of wheat. The Pittsburgh, Fort Wayne, and Chicago railroad traverses it, and the Cleveland, Cincinnati, and Indianapolis railroad intersects the S. E. corner. The chief productions in 1870 were 484,516 bushels of wheat, 424,383 of Indian corn, 461,905 of oats, 78,498 of potatoes, 35,097 tons of hay, 583,528 lbs. of butter, and 310,505 of wool. There were 7,170 horses, 7,001 milch cows, 8,605 other cattle, 73,771 sheep, and 22,927 swine; 4 manufactories of agricultural implements, 6 of machinery, 27 saw mills, 4 flour mills, 8 manufactories of carriages and wagons, 15 of furniture, 2 of hubs, &c., 3 of iron castings, 2 of marble works, 9 of saddlery and harness, 4 of cigars, 1 of woollen goods, 6 planing mills, 5 breweries, 8 tanneries, and 6 currying establishments. Capital, Bucyrus. **V.** A S. county of Indiana, bordering on Kentucky, bounded E. by the Great Blue, S. by the Ohio river, and drained by Little Blue river; area, 280 sq. m.; pop. in 1870, 9,851. The valleys of the streams are productive, but nearly all the rest of the land is rugged and sterile. Coal, iron, and limestone are the most valuable minerals. Lumber, flour, pork, and beef are exported in considerable quantities. The chief productions in 1870 were 64,437 bushels of wheat, 234,458 of Indian corn, 63,699 of oats, 29,631 of potatoes, 3,744 tons of hay, 82,419 lbs. of butter, 27,736 of wool, and 56,524 gallons of sorghum molasses. There were 2,778 horses, 2,307 milch cows, 3,565 other cattle, 10,223 sheep, and 13,374 swine. Capital, Leavenworth. **VI.** A S. E. county of Illinois; area, 420 sq. m.; pop. in 1870, 13,889. It is separated from Indiana on the east by the Wabash river, and drained by Embarras river and its N. fork, the former passing through the S. W. part and the latter flowing along the W. boundary. The surface is occupied in great part by fertile prairies. The chief productions in 1870 were 212,984 bushels of wheat, 581,964 of Indian corn, 136,255 of oats, 26,841 of potatoes, 11,697 tons of hay, 164,193 lbs. of butter, 72,931 of wool, 27,530 of tobacco, and 30,667 gallons of sorghum molasses. There were 6,274 horses, 3,179 milch cows, 4,521 other cattle, 23,763 sheep, and 19,819 swine; 7 saw mills, and 1 woollen factory. Capital, Robinson. **VII.** A N. county of the S. peninsula of Michigan, watered by the Au Sable river and its branches, and by the Manistee; area, 620 sq. m. The census of 1870 furnishes no statistics. **VIII.** A S. W. county of Wisconsin, separated from Iowa by the Mississippi river, bounded S. E. by the Wisconsin, and intersected by the Kickapoo; area, 612 sq. m.; pop. in 1870, 13,075. The surface is hilly, and occupied partly by prairies. The Milwaukee and St. Paul railroad, Prairie du Chien division, traverses it. The chief productions in 1870 were 191,669 bushels of wheat, 261,879 of

Indian corn, 160,939 of oats, 79,649 of potatoes, 12,264 tons of hay, and 226,277 lbs. of butter. There were 3,149 horses, 3,779 milch cows, 6,346 other cattle, 7,921 sheep, and 9,668 swine; 2 breweries, 5 saw mills, 1 pork-packing establishment, 2 manufactories of agricultural implements, 4 of carriages and wagons, 2 of saddlery and harness, and 1 of soap and candles. Capital, Prairie du Chien. **IX.** A W. county of Iowa, intersected by Boyer and Soldier rivers, and drained by affluents of the West Nishnabatona; area, about 600 sq. m.; pop. in 1870, 2,530. The Chicago and Northwestern railroad passes through it. The chief productions in 1870 were 78,538 bushels of wheat, 131,635 of Indian corn, 35,431 of oats, 13,236 of potatoes, 6,468 tons of hay, and 50,138 lbs. of butter. There were 921 horses, 952 milch cows, 1,803 other cattle, 2,629 sheep, and 1,083 swine. Capital, Denison. **X.** A S. E. county of Missouri, intersected by Maramec river, and drained by two of its branches; area, 600 sq. m.; pop. in 1870, 7,982, of whom 86 were colored. The surface is much diversified, and in many parts hilly. It is occupied by tolerably fertile prairies and tracts of excellent timber, but the county is less remarkable for its agricultural productions than for its mineral wealth. The hills contain very rich mines of copper and iron, the latter being extensively worked. Lead is also found in various localities, and stone is obtained in the vicinity of the iron district. The Atlantic and Pacific railroad passes through it. The chief productions in 1870 were 64,530 bushels of wheat, 242,906 of Indian corn, 66,882 of oats, and 16,265 of potatoes. There were 2,573 horses, 2,474 milch cows, 4,837 other cattle, 9,380 sheep, and 18,917 swine. Capital, Steelville. **XI.** A S. E. county of Kansas, bordering on Missouri, watered by Spring river and other affluents of the Neosho; area, 504 sq. m.; pop. in 1870, 8,160. The Missouri River, Fort Scott, and Gulf, and the Missouri, Kansas, and Texas railroads pass through it. The chief productions in 1870 were 34,382 bushels of wheat, 285,500 of Indian corn, 56,785 of oats, 33,368 of potatoes, 14,745 tons of hay, and 130,319 lbs. of butter. There were 3,304 horses, 3,014 milch cows, 8,952 other cattle, 2,605 sheep, and 3,245 swine. Capital, Girard.

CRAWFORD, Nathaniel Macon, D. D., an American clergyman, born near Lexington, Ga., March 22, 1811, died near Atlanta, Oct. 27, 1871. He graduated at Franklin college (university of Georgia), Aug. 5, 1829, studied law and was admitted to the bar, but never practised. In 1837 he was elected professor of mathematics in Oglethorpe university, Ga., which office he held until the close of 1841. In 1843 he was licensed to preach, and was ordained in 1844. He was pastor of the Baptist church in Washington, Ga., in 1845, and in Charleston, S. C., in 1846. From 1847 to 1854 he was professor of Biblical literature in Mercer university, at Penfield, Ga., of which he became president in 1854, and in 1857 professor of mental and moral philosophy in the university of Mississippi. In the same year he became professor in the Western Baptist theological seminary at Georgetown, Ky., where he remained until July, 1858, when he resumed the presidency of Mercer university. In 1857 he was elected president of the Bible revision association. He wrote many articles for periodicals, and several small works on some of the tenets of his church. In 1858 he published a volume entitled "Christian Paradoxes."

CRAWFORD, Quintin. See CRAUFURD.

CRAWFORD, Thomas, an American sculptor, born in New York, March 22, 1814, died in London, Oct. 10, 1857. In early childhood he manifested an extraordinary fondness for art. He worked first at wood carving, and at the age of 19 entered the studio of Frazee and Launitz, monumental sculptors in New York. After two years, during which he executed several monumental designs, and worked upon portrait busts of Chief Justice Marshall and others, he set out for Italy, furnished with a letter of introduction to Thorwaldsen, who invited him to work in his studio. For several years he wrought earnestly, and soon began to be intrusted with commissions for portrait busts and copies in marble. The sums received for these barely sufficed for his support and the purchase of the necessary materials; but he was glad to work for any remuneration, feeling that excellence could only be attained by incessant labor. During 10 weeks in 1837 he modelled 17 busts to be put in marble, and copied in marble the figure of Demosthenes in the Vatican. In 1839, having previously executed a few original pieces, he designed his "Orpheus," the work which first brought him into notice in America, and which elicited the warm commendation of Gibson and Thorwaldsen. Charles Sumner, who saw it in Rome, was so struck with its merits that on his return to Boston he procured by subscription the means of sending Crawford an order for a copy in marble. Its reception in America, where it was exhibited with others of Crawford's works, formed an epoch in the life of the artist. The statue is in the possession of the Boston Athenæum. Crawford was now enabled to give more attention to ideal composition. To this period may be referred his more purely classic subjects and his Scriptural bass-reliefs, remarkable for the spirit and propriety of their treatment. His industry seemed to increase with the favorable turn in his fortunes. He fitted up large studios, which soon became a favorite resort of strangers from the number of striking original works always to be seen there. In 1844 he visited America, where he married. During the next summer he modelled a remarkable bust of Josiah Quincy, sr., for the library of Harvard university, and returned to Europe with numerous commissions for new works. In 1849 he made a second visit to the United States, and reading in a newspaper the propo-

sals for the monument to be erected to Washington by the state of Virginia, he prepared his model, which was unanimously adopted as the best offered. From the period of his return to Rome in 1850 until he was incapacitated for work, he was chiefly engaged on that series of grand historical and allegorical pieces which attested the finest development of his artistic powers. One of the most remarkable of these was the bronze statue of Beethoven, for the Boston music hall. The colossal equestrian statue of Washington, 25 feet in height, was subsequently cast in Munich under the artist's personal superintendence, and arrived at Richmond in the beginning of 1858. Crawford had meanwhile received a commission from congress to furnish marble and bronze statuary for the new capitol at Washington. Among the most remarkable of his designs were those for the pediment and the bronze doors; and his grandest work is the colossal statue of "Armed Liberty" for the dome of the capitol. While engaged on these works he executed the "Babes in the Wood," the "Hebe and Ganymede," and several portrait busts. In 1856 he visited America, and leaving his family there returned alone to Rome. A cancerous tumor on the brain soon after manifested itself, and he was obliged to renounce the practice of his art. He was successively removed to Paris and London for the benefit of medical treatment, and died after a painful illness. Crawford finished upward of 60 works, many of them colossal, and left about 50 sketches in plaster and designs of various kinds. His chief mythological subjects are the "Genius of Mirth," the "Muse," "Autumn," "Orpheus," "Cupid," "Flora," "Io," the "Peri," "Apollo," "Homer," "Diana," "Vesta," "Sappho," the "Archer," "Paris presenting the Apple to Venus," "Mercury and Psyche," "Jupiter and Psyche," "Psyche Found," "Nymph and Satyr," and "Boy and Goat." His Scriptural compositions include "Adam and Eve," "David and Goliath," "David before Saul," "The Shepherds and Wise Men before Christ," a group of 24 figures; "Christ disputing with the Doctors," 12 figures; "Christ ascending from the Tomb," "Christ raising Jairus's Daughter," the "Daughter of Herodias," "Repose in Egypt," "Eve Tempted," "Eve with Cain and Abel," "Lead us into Life Everlasting," "Christ blessing little Children," and "Christ at the Well of Samaria." Among his other works are "The Dancers," two life-size figures of children; statues of Channing, Washington Allston, and Henry Clay; and many busts, including a beautiful one of his wife. Besides his strictly national works, there are several open to the public. The "Beethoven" is in the music hall at Boston; "James Otis," in the chapel at Mount Auburn; "Adam and Eve," "Orpheus," the "Shepherdess," and "Josiah Quincy," in the Boston Athenæum; the "Indian," in the library of the New York historical society; and "Flora" and 87 casts from his works in the New York Central park.

CRAWFORD, William Harris, an American statesman, born in that part of Amherst co., Va., afterward erected into Nelson co., Feb. 24, 1772, died in Elbert co., Ga., Sept. 15, 1834. In 1779 his father removed to Edgefield district, S. C., about 30 miles above Augusta, Ga. In 1783 he again removed, crossing the Savannah river into Georgia, and settled in the present county of Columbia, where he died, leaving his family poor. The son began to teach school at the age of 16. In 1794 he entered the academy of Dr. Waddel, where he remained two years; after which he became principal of an academy in Augusta, studying law at the same time. He was admitted to the bar in 1798, and in the following spring commenced legal practice at Lexington, and soon after assisted in compiling the first digest of the laws of Georgia. In 1802 he was elected to the state senate, where he introduced a resolution, which was adopted by both branches of the legislature, urging Mr. Jefferson to become a candidate for a third presidential term. In 1807 he was elected to fill a vacancy in the United States senate. During the canvass he fought two duels, killing his opponent in the first, and being wounded in the second. He was elected as a supporter of the administration, but opposed the embargo bill, though at the next session he spoke and voted against its repeal. He was reëlected in 1811, and became the exponent in the senate of the financial policy of Mr. Gallatin, then secretary of the treasury, and voted for a renewal of the first bank of the United States, a measure which was rejected by the casting vote of the vice president, George Clinton. When, in March, 1812, the latter was disabled by sickness from acting as president of the senate, Mr. Crawford was chosen president *pro tem.* In common with Madison, Gallatin, and other older members of his party, he was not in favor of the war with Great Britain, and opposed any augmentation of the navy. But Madison and Gallatin having yielded to the demands of the younger and more ardent section of the party, Crawford went with them and voted for the war. In 1813, having just refused the secretaryship of war, he was appointed minister to France. He took a warm interest in the negotiations at Ghent, and was in favor of peace, if it could be obtained, even without any mention of the impressment question, and that without waiting for definite instructions to that effect from Washington. During his residence in France he acquired the friendship of Lafayette, who appointed him agent for his American lands. In 1815 he asked a recall, and the senate having refused to confirm Gen. Dearborn, whom Madison had nominated as secretary of war, Mr. Crawford, while still on his voyage home, was appointed to fill his place. The next year, on the retirement of Alexander J. Dallas, he was appointed secretary of the

treasury. There were those who desired to support him as a candidate for the presidency instead of Monroe, and he received a large vote in the congressional caucus; but upon Monroe's accession he continued to hold the secretaryship of the treasury, having J. Q. Adams and J. C. Calhoun as his colleagues in the cabinet. The course of events had led a portion of the democratic party to alter their views as to the powers and duties of the federal government. Abandoning that strict limitation of federal authority, power, and patronage, of which Jefferson had been the champion, many among them had begun to favor a liberal expenditure of money, especially in facilitating trade and intercourse between the states by means of internal improvements. Calhoun was at this time an active champion of these new views. They were opposed by Crawford, who was for adhering to the old Jeffersonian policy, and was denounced in consequence in Calhoun's newspaper organ at Washington as a "radical." Thus sprang up a warm political and even personal hostility between these two men. This feeling of hostility was aggravated upon the coming up of the question of a successor to Monroe. Crawford, ever since the withdrawal of his claims at the former election in favor of Monroe, had been considered as in some sense the destined successor. He was nominated as such by a congressional caucus, held Feb. 14, 1824. All the other candidates, Calhoun, Jackson, Adams, and Clay, joined against him; and among other assaults upon him was one in the house of representatives involving charges of official misconduct as secretary of the treasury. He demanded an immediate investigation, and a committee was appointed, of which Daniel Webster, Edward Livingston, and John Randolph were members. Crawford, though sick in bed at the time, dictated a conclusive reply, and the committee made a unanimous report declaring the falsity of the charges. The sickness of Mr. Crawford was long and severe, and though it had little influence on the vote given for him as president (he obtained all the electoral votes of Virginia and Georgia, five in New York, two in Maryland, and one in Delaware, 41 in all), it wholly destroyed any chance of his election by the house, and removed him henceforth from the political arena. He continued for some time an invalid, his disease being paralysis, occasioned it was said by the improper use of lobelia for an attack of erysipelas. His health gradually improved, but he never entirely recovered. He could not see to write, and had not the physical ability to encounter any labor. He returned to Georgia; but his pecuniary means were not large, and a vacancy occurring in May, 1827, on the bench of the circuit in which he had formerly practised, he accepted a temporary appointment from the governor to fill it. In November following he was chosen by the legislature for the remainder of the vacant term, in which position (the judges holding office for three years only) he was continued at two subsequent elections in 1828 and 1831. Though his disorder affected him both physically and mentally, he made a much better judge than would have seemed possible to those familiar with his paralyzed state. He was strongly opposed to the nullification movement. To the last he retained his social temper and admirable conversational talent. He was a hearty laugher, negligent in his dress, simple in all his arrangements, and totally regardless of artificial dignity. In the family his residence was familiarly known as liberty hall. In religion he inclined to the Baptists.

CRAWFORDSVILLE, a city and the capital of Montgomery co., Indiana, 43 m. N. W. of Indianapolis; pop. in 1870, 3,701. It is finely situated in a fertile and undulating region on the banks of Sugar creek. It is the seat of Wabash college (Presbyterian), which in 1871 had 10 instructors, 226 students, of whom 138 were in the preparatory department, and a library of 12,000 volumes. There are two weekly newspapers and several manufactories. The Indianapolis, Bloomington, and Western, and the Louisville, New Albany, and Chicago railroads pass through it.

CRAYER, Gaspard de, a Flemish painter, born in Antwerp in 1582, died in Ghent in 1669. He was the pupil of Raphael van Coxcie, but subsequently developed a style not unlike that of Rubens, with whom, as also with Vandyke, he was on terms of intimate friendship. He was appointed court painter at Brussels, but in the zenith of his fame he retired to Ghent. Commissions followed him thither from all parts of the country, and to the close of his life he was an almost incessant worker. Biblical subjects principally occupied him, and he also occasionally attempted with marked success history and allegory. In subjects demanding energy and grandeur of treatment, and in coloring, he falls below Rubens; but in quiet compositions he often equals him. In freedom and mastery of touch he rivals his great model, and in respect to the qualities which combine to form a historical painter he probably approached nearer to him than any of his countrymen. That he has not occupied this place in popular estimation is partly owing to the inferior class of work which he produced in his later years. His pictures are very numerous. Among the best are a "Virgin and Child adored by Saints," in the Louvre; the "Miraculous Draught of Fishes" and the "Assumption of St. Catharine," in the Brussels gallery; the "Judgment of Solomon," in the Ghent gallery; the "Virgin and Child," in the Pinakothek, Munich; and the "Virgin and Child, enthroned and adored by Saints," in the Belvedere, Vienna. The Metropolitan museum of art of New York possesses a fine example of Crayer in a picture, 10 ft. 8 in. in height by 15 ft. 8 in. in width, representing the meeting between Alexander and Diogenes.

CREAM OF TARTAR, a bitartrate of potassa purified from the crude tartar or argol, which

collects in a crystalline deposit upon the bottom and sides of wine casks during the fermentation of the wine. Its chemical composition is: tartaric acid 2 equivalents, = 132; potassa 1, = 47·2; and water 1, = 9. As the saccharine matters which hold the tartar in solution are converted into alcohol, the salt is precipitated in a crude state, together with some tartrate of lime and the coloring matter of the wine. Red wines give a red color to the crude article. When the crude salt is dissolved in boiling water, and this is allowed to cool, crystals of the cream of tartar are deposited and form a crust on the bottom of the vessel, cold water holding in solution only $\frac{1}{184}$ of its weight of the salt, and boiling water $\frac{1}{18}$. The crust is redissolved in boiling water, and 4 or 5 per cent. of pipe clay is added. On evaporating the solution, the clay precipitates with the coloring matter, and the salt of tartar is deposited in white crystals. These are bleached by being spread upon cloths for some days and dried, and then constitute the cream of tartar of commerce. It is usually sold as a powder, and in this state is liable to have been mixed with various adulterants, as chalk, clay, gypsum, sand, flour, &c. It is therefore better to purchase it in the crystalline form in which it is received from the French manufacturers. It is, however, never pure, always containing a small percentage of tartrate of lime.—Cream of tartar is used in medicine as a diuretic, refrigerant laxative, and cathartic. In the dose of 40 grs. or less, largely diluted with water, and repeated several times a day, it is a diuretic and moderate refrigerant. In the dose of about two drachms it is a laxative, and in the dose of half an ounce it acts as a cathartic, producing watery discharges. Combined with digitalis and squill, it is often advantageously prescribed in dropsical affections. It is used as a refrigerant drink in many febrile conditions. Its laxative action is useful in piles and prolapsus ani. As a purge (generally combined with jalap) it often does good service in inflammation, and especially in inflammatory dropsy. Its tendency is to render the urine alkaline, though it is less powerful in this direction than the more soluble salts of the alkalies combined with vegetable acids. A refreshing beverage called imperial is prepared by dissolving half an ounce in three pints of boiling water, and adding four ounces of white sugar and half an ounce of fresh lemon peel.—Cream of tartar and tartrate of antimony compose the medicine tartar emetic. Rochelle salt is prepared by adding cream of tartar to carbonate of soda, by which a tartrate of potassa and soda is produced. When decomposed by heat, cream of tartar is converted into a pure carbonate of potassa. Mixed with half its weight of nitrate of potash and deflagrated, it forms the flux called black flux, used for crucible assays. White flux is prepared with two parts of nitre to one of cream of tartar. In making bread, cream of tartar is often usefully employed, mixed with half its weight of carbonate of soda. The excess of acid produces slow effervescence, and the escape of carbonic acid gas, distending the dough, causes it to rise.

CREATINE (Gr. *κρέας*, flesh), a neutral crystallizable substance, one of the normal ingredients of the urine of man and animals; so called because it is derived from the muscular flesh, in which also it exists in appreciable quantity. Creatine is composed of oxygen, hydrogen, carbon, and nitrogen. It crystallizes in rectangular prisms. It is soluble in water, slightly soluble in alcohol, but not at all in ether. It exists in the urine, in the human species, in the average proportion of about 1·25 part in 1,000, and in the muscles in the proportion of 0·67 part in 1,000. It is regarded as one of the products of the physiological disintegration or waste of the muscular tissue, from which it is absorbed by the blood, carried by the circulation to the kidneys, and thence eliminated from the body as an ingredient of the urine.

CRÉBILLON. I. Prosper Jolyot de, a French tragic poet, born at Dijon early in 1674, died in Paris, June 17, 1762. His father placed him in the office of an attorney who was fond of the drama and encouraged his clerk to devote himself to dramatic literature. His first tragedy, *Idoménée*, was performed in 1705. *Atrée*, in 1707, produced an impression by its gloomy plot and energetic style. *Électre* succeeded in 1709; and two years later *Rhadamiste et Zénobie*, which is still considered his best production. His next tragedy, *Xerxès*, was a failure; and *Sémiramis*, performed in 1717, and *Pyrrhus*, in 1726, were little more successful. He now kept aloof from the stage for 22 years. Having squandered his large earnings and lost his father and his wife, he retired to a miserable garret, where his sole companions were dogs, cats, and ravens, and where he lived neglected by all his friends, except his son. In 1731 the French academy elected him one of their number; and he wrote a poem as his reception discourse. Some 14 years later Mme. de Pompadour, who was dissatisfied with Voltaire, thought of bringing Crébillon into competition with him. The old dramatist received a pension of 1,000 livres, and was encouraged to resume his former calling. He now completed his tragedy of *Catilina*, which was performed Dec. 12, 1748, in a style of unusual splendor, at the king's expense, and warmly applauded by the court party, while his superiority over Voltaire as a tragic poet was loudly proclaimed. His last effort was his *Triumvirat*, which he wrote when over 81. Among French tragic poets Crébillon ranks next to Corneille, Racine, and Voltaire. **II. Claude Prosper Jolyot de,** a French novelist, son of the preceding, born in Paris, Feb. 14, 1707, died there, April 12, 1777. He was a gay companion, full of wit and humor, and he wrote a series of licentious novels which pleased Miss Stafford, a young, handsome, and

rich English woman, so much that she came to France and married him. The least objectionable of these novels is *Les égarements du cœur et de l'esprit.* He was also a song maker, and aided in the establishment of the lyric society known as *Le caveau.*

CRÉCY, or **Cressy,** a village of N. France, in the department of Somme (Picardy), 11 m. N. of Abbeville; pop. about 1,700. The village is situated on the small river Maye, a tributary of the Somme. It has tanneries, soap and oil manufactories, and considerable trade in wood from the adjoining forests. Crécy owes its celebrity to the battle fought, Aug. 26, 1346, between the English under Edward III. and the French under Philip VI. Some discrepancy exists in the estimates of the respective forces. Froissart makes the English 30,000 to 40,000, and the French 100,000 to 120,000. Turner says the English army comprised 800 men-at-arms, 2,000 archers, and 1,000 Welsh, under the Black Prince; 800 men-at-arms and 1,200 archers, under the earl of Northampton; and the reserve, under the king, not engaged in the battle, 700 men-at-arms and 2,000 archers. Allowing for retainers, the total number may be computed at 17,000. Reducing the estimate of the French in the same ratio, we may assume the battle to have been fought between 17,000 English and 50,000 to 60,000 French. Edward saw the danger to which a hasty retreat would expose him in face of the enemy's superior force; he therefore determined to make a stand. Selecting a rising ground near Crécy, he drew up his army on the ascent, and threw up trenches on his flanks, with a wood in his rear which he also secured by intrenchment. Villani alleges that Edward had six pieces of artillery, which he posted so as to sweep the enemy's advance. Artillery had been recently invented, and does not appear to have been in use in the field until the present occasion. Philip was confident that he had only to force the English to an engagement to destroy them utterly; hence he advanced his troops with little attention to order or discipline. His advanced guard of Genoese bowmen began the attack, but rain having fallen, their arrows fell short. The English sent a shower of shafts that drove the Italians back on the cavalry of the duke d'Alençon. The English artillery opened fire, and the prince of Wales (aged 15) charged with his men-at-arms on the struggling mass. An opportune movement of the French retrieved their fortunes, and for a long time the battle hung doubtfully. Lord Cobham despatched Sir Thomas Norwich to the king requesting him to send the reserve to the assistance of the prince. "No," said Edward; "tell my boy he must win his spurs." This speech invigorated the English. They again charged. The duke d'Alençon was killed and the French line was broken. Philip made a final effort to recover the day, but without effect. The rout had become a flight. Of the French 30,000 perished, including 2,600 knights and gentlemen and 4,000 men-at-arms, while the English loss was comparatively small. Froissart relates the singular fate of King John of Bohemia Being old and blind, he ordered the bridle of his horse to be tied on each side to the horses of two cavaliers of his train, and, thus guided, charged into the battle, where he fell, together with his attendants. His crest, consisting of three ostrich feathers, with the motto *Ich dien* (I serve), was, according to the custom of chivalry, adopted by the Black Prince, and is still the crest of the prince of Wales. This battle broke for a time the power of France, and enabled the English in the following year to become masters of Calais.

CREDI, Lorenzo di, a Florentine artist, born about 1453, died about 1536. He was a fellow pupil of Leonardo da Vinci, and so closely followed his style that some of his copies of Leonardo's works are scarcely to be distinguished from the originals. His "Holy Families," of which he painted a great number for private collections, are gracefully designed and highly finished. His most esteemed works are a "Madonna and Child with Saints Julian and Nicholas," now in the Louvre gallery, and the "Birth of Christ," at Florence.

CRÉDIT MOBILIER, a joint-stock company founded in Paris Nov. 18, 1852, under the lead of the brothers Émile and Isaac Péreire, and on the principle of limited liability, for the transaction of general banking business, to facilitate the construction of public works, and to develop national industry. Its capital of 60,000,000 francs was divided into shares of 500 francs. It was authorized by its charter to hold public securities and shares and bonds of industrial corporations, and to issue its own bonds to an amount equal to its subscriptions and purchases, and, after its original capital was all taken, to issue bonds to the extent of ten times that amount. The charter conferred unlimited power to engage in financial operations, except that it forbade the selling of public securities in advance and the buying of them on time. The annual profits of the company varied very widely; the highest dividend being about 41 per cent., in 1855, and the lowest 5 per cent., in 1857–'8 and 1865–'7. The average for 15 years (1853–'67) was nearly 17 per cent. Among the enterprises achieved by this company were the consolidation of the Paris gas and omnibus companies, the creation of the company of the Grand Hôtel du Louvre, and of the maritime company of clippers, immense railway operations in Austria, Spain, Russia, and Switzerland, and heavy loans to French railway companies. From the first it met with powerful opposition. M. Fould, minister of finance, was strongly against it. M. Berryer called it "the greatest gambling house which the world has ever seen." In 1867, having for three years paid but trifling dividends, it lost the confidence of the shareholders, and the stock fell to 28 per cent. of

its par value. Its managers retired with immense fortunes, and the concern went into liquidation.—On the model of this company, similar organizations were created in Geneva, Leipsic, Amsterdam, Madrid, and London. The title "Crédit Mobilier of America" was adopted by a joint-stock company organized in May, 1863, with a capital of $2,500,000. In January, 1867, the charter having been purchased by a company organized for the construction of the Union Pacific railroad, the stock was increased to $3,750,000, and afterward rose to a great value, paying enormous dividends. In 1872, in the course of legal proceedings in Pennsylvania respecting the ownership of stock, it appeared that several members of congress, as well as the actual vice president and one of the candidates for the vice presidency, were more or less secret stockholders. This caused a great political scandal, as it was held to be highly improper for a member of congress to be pecuniarily interested in a corporation whose profits might be so largely and directly affected by his vote on bills concerning the railway it was building. The fact that a presidential canvass was in progress, in which several of the persons implicated took an active part, added interest and excitement to the subject. The result was a congressional investigation in the session of 1872–'3. On Feb. 27, 1873, the senate committee made a report, which closed with a resolution to expel one senator; but no action was taken on it, and five days later his term expired. In the house of representatives resolutions censuring two members were passed.

CREDITON, a town of Devonshire, England, on the Creedy river, 7½ m. N. W. of Exeter; pop. in 1871, 6,565. Besides the parish church, an elegant Gothic structure with a beautiful altarpiece, there are several chapels for dissenters, and many schools, including a free grammar school founded by Edward VI. Flour mills and an extensive flax mill are near the town, but the once flourishing manufactures of serge and woollen have greatly declined.

CREEKS (called by themselves Este Muskokee or Muscokulke), a tribe of American Indians, living when first known to the whites on the Flint, Chattahoochee, Coosa, and Alabama rivers, and in the peninsula of Florida. Their traditions and language point to a common origin with the Choctaws and Chickasaws. They claim to have come out of the earth, and to have emigrated from the northwest, led by the Cussitaws, till they reached Florida, whence they fell back and took possession of the region extending east to the Ocmulgee and west to the Coosa and Tallapoosa. As this abounded in creeks and rivulets, it was called by the early English settlers the Creek country, and the Indians came to be known as Creek Indians. Those remaining in Florida were called Seminoles (wanderers). The Hitchitees, Cussitaws, and Cowetas settled on the Appalachicola and Flint; the Coosas and Alabamas on the rivers bearing those names. As early as 1540 the Spaniards under De Soto reached the Coosas, Alabamas, Tuscaloosas, Tallisses, and Pacahas. Twenty years after Tristan de Luna made an alliance with the Coosas. The Spaniards at an early day won over the Appalaches. In the territory occupied by the Creeks were tribes like the Oconees, Okchais, Wetumpkas, and Pacahas, whom they incorporated, and whose language modified the original language of the Creeks. When Carolina and Louisiana began to be settled, the Creek nations were courted by English, French, and Spaniards. The English, establishing Fort Moore, won the lower Creeks by their trade; the upper Creeks were under French influence; the Appalaches had been Christianized by the Spaniards, who by the honors paid the emperor of the Cowetas hoped to control all. In 1710 the Cowetas made war on Carolina, and were received with distinction at St. Augustine; but Chipacafi, who became emperor in 1718, visited Mobile and joined the French side. Fort Alibamon was built by the French and a garrison maintained there. This influence was maintained for several years, but in 1732 Oglethorpe made a treaty at Savannah with eight tribes of Creeks, and in 1739 negotiated with the Cowetas. This influence led them to join him against St. Augustine in 1742. English traders settled among them, but their fidelity was so doubtful that a superintendent was rebuked for making peace between the Creeks and Cherokees because he exposed Carolina to inroads. The overthrow of the French power in North America and the cession of Florida to England brought the Creeks entirely under English influence. They numbered then 5,860 warriors, and had 50 towns. When the American revolution began, the Creeks, influenced by royal officers and traders in their pay, were hostile; and besides minor depredations, they joined in a night attack on Wayne's army in 1782 under Guistersigo. At the peace many tories fled to their towns, keeping up the hostile feelings and ravaging the frontiers of Georgia. Congress finally resolved to make war, if a last effort at peace failed. It was not till 1790 that Washington induced McGillivray and other chiefs to visit New York and make peace. The treaty included the Cussitaws, Tallisses, Tuckabatchys, Natchez, Cowetas, Broken Arrows, Coosadas, Alabamas, and Oaksoys, forming the Upper and Lower Creeks and the Seminoles. Yet in 1792 Creeks joined the Cherokees in the attack on Buchanan's station near Nashville, and on Cavit's station near Knoxville in the following year. A treaty at Coleraine in 1796 made provision for military and trading posts, and in 1802 and 1805 they began to cede lands. A Baptist mission had been projected, but not carried out, and the feeling among the Creeks was still hostile; so that when the second war with England broke out, English envoys and the Creek prophets Monahooe and Hillishagee easily roused them to war. They surprised

Fort Mimms, Aug. 30, 1813, killing 400 men, women, and children. The work of reducing them was prompt. They were defeated at Tallushatchee Nov. 3, by Gen. Coffee; at Talladega on the 7th, by Gen. Jackson; at Hillabee on the 11th, by Gen. White; at Attassee on the 29th, by Floyd; and at Eccanachaca Dec. 23, by Claiborne. Jackson on Jan. 18, 1814, defeated them at Emuckfau, on the 24th at Enotochopco, and finally on March 27 crushed them completely at their last stand, Horseshoe Bend. Having lost nearly 2,000 warriors and had their country ravaged, towns laid in ashes, and misery before them they submitted. By the treaty of Aug. 9 they ceded extensive tracts of land to pay for the war expenses. Other treaties followed ceding more lands, as the whites in Georgia became anxious for their removal, and the United States had in 1802 promised to extinguish the Indian title. Many were in favor of removing, and from the beginning of the century some Alabamas and Coushattas had settled in Louisiana, and finally in Texas, where they remained on a reservation till 1872, when the government took steps to reunite them with the rest of the nation. In 1822 the Creeks were estimated at 22,000, and still occupied much of Georgia and Alabama, and the chiefs had decreed that any one signing a treaty ceding lands should be put to death. When Gen. William McIntosh and a few other chiefs were induced to sign a treaty at Indian Spring, Feb. 12, 1825, ceding all their Georgia lands and much in Alabama for an equal quantity on the Arkansas and Canadian rivers and $400,000 in money, the nation repudiated the treaty, and on May 1 put Gen. McIntosh to death. The Creeks then divided into two parties, one, under Chilly McIntosh, favoring emigration, the other opposing it. A treaty at Washington, Jan. 24, 1826, declared null and void that of Indian Spring, but ceded their Georgia lands, except a small strip on the Chattahoochee, and made provision for removing the McIntosh party, stipulated sums of money to be paid to both divisions of the tribe. The other party retired for a time to Alabama. In 1828 by further largesses the tribe were induced to ratify past cessions. In 1836 some of the Creeks, under Opothleyoholo, Menawa, and other chiefs, joined the United States troops against the Seminoles; but others took up arms and began a general attack on the frontier villages in Georgia and Alabama. Gen. Scott soon reduced them, and the government at once set about the removal of the whole tribe to the territory assigned them between the Arkansas and Canadian. In all 24,594 were removed, 236 perishing on the steamboat Monmouth. Only 744 remained east of the Mississippi. Government unwisely attempted to force a union between them and the Seminoles, but this only created trouble. Attempts were made to Christianize and elevate them; but as Christianity was known only as the negro slaves presented it, nothing but contempt was shown for its worship and doctrine, and the Creeks refused missionaries and schools. It was not till 1843 that a school was opened at Coweta. Missions followed under the direction of the Methodists, Presbyterians, and Baptists, and some progress was made; books were printed and a better spirit awakened. The tribe however steadily declined. In 1857 they numbered only 14,888, having lost nearly one fourth in 20 years. When the civil war began in 1861 the tribe divided; 6,000 under the head chief joined the confederates, and others under Opothleyoholo adhered to the United States. These defeated the confederates in two battles, but in a third battle were utterly defeated, and 6,000 or 8,000 men, women, and children fled to Kansas. There Gen. Hunter relieved them, but numbers perished; 1,000 entered the army. After the war they were estimated at 14,396. By treaty of June 14, 1866, proclaimed Aug. 11, the Creeks ceded 3,000,000 acres at about 30 cents an acre, the United States to pay $975,000, only $100,000 directly to the loyal portion.—The government of the Creeks was peculiar. Each town was independent of the rest, ruled by its own *micco* or elective king, next to whom was the war chief. Each town had its square enclosed by houses for the celebration of the great fast called *posketa*, or more commonly *busk*, which was attended with curious ceremonies. The micco and war chief had special houses around the square. The number of chiefs in time became very great and oppressive to the tribe, so that they were reduced to 500; but a new form of government was desirable, and necessary for any real improvement. In 1868 a plan was adopted including a first and second chief, a house of warriors, and a house of kings; but it was not unanimously accepted, fully one half the tribe opposing it. In 1869 the portion of the Creeks who had since the war been living in the Cherokee country were brought back to the Creek territory. In 1872 the Creeks, estimated at 13,000, had 3,215,495 acres, only 30,000 cultivated; they had 33 schools under the Methodists, and one Presbyterian, with 760 pupils; their annual payments from the government amounted to $68,000.—The Muskokee language has no sound like *a* in fate, and no *b*, *c*, *d*, *g*, *j*, *r*, *q*, *v*, *x*, or *z*. In the printed books *c* represents *tch*, and *r* a sound like *hl*. The two principal dialects are the Main Creek and Hitchitee; the Alabama, Coosady, and Mikasuky, spoken by the Seminoles, approach the Hitchitee. The Uchee and Natchez are spoken by remnants of those tribes. Women have words peculiar to themselves. The only grammar of the language is that by H. F. Buckner (Marion, Ala., 1860), analyzed in Brinton's "Contributions to a Grammar of the Muskokee" (Philadelphia, 1870). The printed books are almost entirely religious.

CREEPER, a bird of the order *passeres*, tribe *tenuirostres*, and family *certhiadæ*. To the subfamily *certhianæ*, containing five genera, and to

the genus *certhia* (Linn.), belongs our common brown creeper (*C. familiaris*, Linn.). The bill is moderate, slender, curved, with compressed sides and acute tip; the wings are moderate and rounded; the tail long and graduated, with the ends of the feathers rigid and acute; tarsi shorter than the middle toe; all the toes long and slender, with curved and sharp claws. There are two species, one inhabiting Asia, and the other Europe and North America; those who consider the American bird different, because found here, without being able to give any specific characters for it, may call it *C. Americana* (Bonap.). The creepers are found wherever trees are thick, climbing up the trunks with the aid of the tail, running along and on the under surface of branches in search of insects concealed in the bark. The upper parts of our species are reddish brown, the head dark, the rump lighter; all the feathers have a central dull whitish streak; wings deep brown, the coverts tipped with dull yellow, and the secondaries barred with the same; lower parts and band over eye



Creeper, with Claw and Tail Feather.

silvery white; sides tinged with brown; webs of the quills, except of the outer three, crossed with a dull yellowish band; tail yellowish brown; length of bird 5½ inches, extent of wings 8½; the female is smaller and darker. It is extensively distributed, alighting on all kinds of trees, preferring the tallest, in company with the smaller woodpeckers and nuthatches. It breeds in holes in trees, often taking the abandoned nests of woodpeckers and squirrels; the eggs are six to eight, of a yellowish white color, with irregular purplish dots, especially at the larger end. It feeds on ants, larvæ, small insects, and particles of lichens, in the winter coming into the orchards near houses. It is an exceedingly active and restless bird, shooting down from the top of an examined tree to the base of another, which it ascends as before.—To the same family belong the tree-creepers (*dendrocolaptinæ*), larger birds, with long curved bills, peculiar to South America; their habits are the same as those of the genus *certhia*. The black and white creeper is the *mniotilta varia* (Vieill.), of the family *sylvicolidæ*.

CREFELD (Ger. *Krefeld*), a town of Rhenish Prussia, the principal seat of silk and velvet manufacture in Prussia, connected by railway with Cologne and Düsseldorf, 12 m. N. W. of the latter city; pop. in 1871, 57,128. Its most important public edifices are a Roman Catholic church, two Protestant churches, a synagogue, an orphan asylum, and a deaf and dumb institution. The silk manufacture was introduced in the 17th century by a colony of Huguenot refugees. It employs about 6,000 persons in the town and its vicinity; and the annual products are estimated at $7,500,000. In 1871 the exports to the United States amounted to about $2,256,000. There are also manufactories of woollen, cotton, and linen fabrics, potteries, tanneries, and distilleries. It was formerly a place of considerable strength, and its walls are still standing.

CREICHTON, John, an Irish soldier of fortune, born in the county of Donegal in 1648, died in 1733. He entered the horse guards of Charles II., served against the Covenanters of Scotland, and when James II. was succeeded on the throne by William III. attempted to excite a rebellion, but was imprisoned at Edinburgh. After several years he was permitted to return to Ireland. His "Memoirs," revised by Swift, appeared in 1731, and contain curious particulars relative to the reigns of Charles II. and James II., and notices of characters and events which served as materials for Sir Walter Scott in writing "Old Mortality."

CRELLE, August Leopold, a German architect and mathematician, born at Eichwerder, March 11, 1780, died in Berlin, Oct. 6, 1855. He superintended the construction of roads and railways, was employed as a mathematician in the ministry of public instruction, and edited a mathematical periodical (50 vols., 1826–'55), and one for architecture (30 vols., 1828–'51).

CREMA, a town of Lombardy, Italy, in the province and 22 m. N. W. of the city of Cremona, on the Serio, and on the railway from Cremona to Bergamo; pop. about 8,000. It is well built and fortified, and has several handsome churches and palaces, as well as manufactories of lace, hats, thread, and silk. It is the seat of a bishop, and has a gymnasium and a theatre. Crema was founded in the 6th century by some fugitives whom the oppressions of Alboin, the first Lombard king of Italy, had driven from their homes. During the wars of the Guelphs and Ghibellines it was destroyed by Frederick I. after a most obstinate resistance, but was afterward rebuilt. In 1797 it was captured by the French.

CREMATION. See supplement.

CRÉMIEUX, Isaac Adolphe, a French lawyer and statesman, born of Jewish parents at Nîmes, April 30, 1796. He began to practise law in 1817. Having acquired a considerable reputation by his eloquence and boldness in the defence of some victims of the royalist reaction in the south of France, he removed to Paris

about 1830, but was not fortunate there in his first important forensic effort as counsel for Guernon-Ranville, a minister of Charles X., who had been arraigned as one of the authors of the ordinances of July, 1830. Overcome by the excitement of the occasion, he fainted, and was unable to continue the defence. But he soon regained his prestige in the courts, and after having purchased from Odilon Barrot his office and function as advocate, he defended with great ability Armand Marrast, Raspail, and other republicans prosecuted by the government. In 1840 he visited Turkey and Egypt, and procured the acquittal of the Jews of Damascus, who had been accused of the murder of a Catholic priest. He took his seat in the chamber of deputies in 1842 on the extreme left, supported free-trade principles, and contributed not a little to pave the way for the revolution of 1848. When this at last broke out, he told Louis Philippe and his queen that there was no hope left, and recommended them to leave France immediately. He then proceeded to the chamber of deputies, inclined to support the regency of the duchess of Orleans; but when this became impossible, he proposed a provisional government, of which he was appointed a member, the ministry of justice being intrusted to his charge. On June 7 he left the government in consequence of the prosecution ordered by the constituent assembly against Louis Blanc, whom he defended, but remained a member of the assembly, in which he held a seat for the department of Indre-et-Loire. On Dec. 10 he voted for Louis Napoleon's election to the presidency. Returned to the legislative assembly, he was soon conspicuous among the opponents of the president, and frequently voted with the extreme left. He was arrested at the execution of the *coup d'état*, Dec. 2, 1851, but was soon liberated. He took no further part in politics until early in 1869, when he was an opposition candidate for the corps législatif; he was defeated by his official opponent, but was elected from another district in Paris in November of that year. He opposed the *plébiscite* of April, 1870, and was one of the 17 members who signed the "anti-plebiscitary address." When, after the surrender of Napoleon at Sedan, the government of national defence was formed, Crémieux was named minister of justice, and was one of the members of the government delegation at Tours, and subsequently at Bordeaux. He resigned Feb. 10, 1871, and subsequently urged the payment of the war debt by means of voluntary contributions, offering 100,000 francs as his personal contribution. In 1873 he was elected a member of the national assembly by the city of Algiers.

CREMNITZ. See KREMNITZ.

CREMONA. **I.** A province of N. Italy, bordering on the provinces of Bergamo, Brescia, Mantua, Parma, Piacenza, and Milan, and bounded S. by the Po; area, 670 sq. m.; pop. in 1872, 300,595. It is divided into the districts of Casalmaggiore, Crema, and Cremona, and contains 135 communes. The principal products are flax, wine, oil, cattle, and horses. Silk is the most important manufacture. The province formed part of the duchy of Milan till 1800, and afterward under the French constituted the eastern part of the department of Alto-Po till 1814, when it came into possession of Austria, by whom it was ceded to Italy with the rest of Lombardy in 1859. **II.** A city, capital of the province, on the Po, 46 m. S. E. of Milan; pop. in 1872, 30,919. It contains 45 churches, of which the cathedral, begun in 1107, consecrated in 1190, but not finally completed till 1606, is the most remarkable; it shows the different styles of architecture which prevailed during this long period, the Lombard predominating. Lanzi says that it rivals the pictorial magnificence of the Sistine chapel at Rome. The greatest architectural celebrity of Cremona, however, is the Torazzo, or belfry tower, ending in a spire, the highest of all the towers in N. Italy, reaching the elevation of 396 ft. There are also many sumptuous palaces with fine picture galleries, and a *campo santo*, now used as the repository of the archives, which contains an underground vault and a curious mosaic pavement. Cremona contains a citadel, a gymnasium, a lyceum, an academy of fine arts, infant schools (founded here in 1829, previous to their establishment in any other Italian town), and schools opened at certain hours on Sundays and other holy days. It carries on an extensive trade by means of the Po, and the various canals communicating with that river.—Cremona was a Roman colony, founded in 219 B. C.; it was often attacked by hostile Gallic tribes, and was destroyed by them in 193. In A. D. 69 it was plundered and burned by the troops of Vespasian, who subsequently rebuilt it. In later periods it was often conquered, and had many misfortunes. It was conspicuous by its revolutionary zeal in 1848, when it drove out the Austrian garrison, but was reoccupied by Radetzky. In the 17th and 18th centuries Cremona became famous for the violins made there.

CRENIC ACID, and **Crenates** (Gr. κρήνη, a spring or fountain), an acid and its compounds, so named by Berzelius from having been first found by him in spring water, being among the products of vegetable decomposition and constituents of humus. This acid and the apocrenic acid associated with it differ from the extract of mould or geine of Berzelius in containing nitrogen. Liebig, Graham, and other distinguished chemists do not recognize the existence of this substance. The following description is given of it as obtained by Berzelius: a sour, yellow mass, reddening litmus, soluble in water and alcohol; forming salts (crenates) with bases, which salts are soluble in water, but not in alcohol; obtained from ochreous sediments by boiling with caustic potash, saturating with acetic acid, and precipita-

ting with acetate of copper the crenic acid as a crenate of copper. This is decomposed by sulphuretted hydrogen, and purified by washing with alcohol. Its formula is given as $C_{24}H_{12}O_{16}$, or $C_7H_8NO_6$.

CRENSHAW, a S. E. county of Alabama, drained by Patsaliga and Conecuh rivers; area, about 600 sq. m.; pop. in 1870, 11,156, of whom 2,206 were colored. It has been recently formed from portions of Butler, Coffee, Covington, Lowndes, and Pike counties. The surface is generally hilly, and the soil sandy and poor. Pine forests cover a considerable portion of it. The chief productions in 1870 were 263,615 bushels of Indian corn, 45,320 of sweet potatoes, 4,638 bales of cotton, and 10,855 lbs. of rice. There were 1,173 horses, 697 mules and asses, 2,843 milch cows, 4,552 other cattle, 2,610 sheep, and 14,263 swine. Capital, Rutledge.

CREOLE, a corruption of the Spanish word *criollo*, which signifies one born in America or the West Indies, of European ancestors. In this sense all the native white people of the United States are creoles. But the word in its English use has undergone both a limitation and an extension. It is limited to persons born within or near the tropics; and it is made to include persons of all colors. Thus the term creole negro is employed in the English West Indies to distinguish the negroes born there from the Africans imported during the time of the slave trade. The application of this term to the colored people has led to an idea common in some parts of the United States, though wholly unfounded, that it implies an admixture, greater or less, of African blood. The creoles of the West Indies and the adjacent coasts of the continent are distinguished by marked physical peculiarities from their European ancestors. Bryan Edwards, who had ample opportunities for observation, and who is a very competent observer, describes them, in his "History of the West Indies," as obviously a taller race on the whole than the European, but in general not proportionately robust. He had known several who were full 6 feet 4 inches in height, but they wanted bulk to come up to the idea of masculine beauty. This peculiarity, however, it is to be observed, is not confined to the creoles of the tropics. The same remark has been made respecting the descendants of Europeans born in the United States and in Australia. The creoles are distinguished for the freedom and suppleness of their joints, which enables them to move with great ease, agility, and grace. From the same cause they excel in penmanship, and in everything requiring flexibility of movement. The effect of climate is likewise obvious in the structure of the eye, the socket being considerably deeper than among Europeans, thus affording a protection against the glare of the sun. Their skin feels considerably colder than that of Europeans; a circumstance observed in a still stronger degree of the negroes, and going to show an effort of nature to protect their bodies against the heat. Even though living in the same way with Europeans, they are rarely subject to those inflammatory disorders, yellow fever included, which prove so often fatal to the former. This is particularly true of the creole women of the West Indies, who live in general very quiet and regular lives, and are very abstemious in their diet. Simple water or lemonade is the strongest beverage in which they indulge, and a vegetable mess at noon, seasoned with Cayenne pepper, constitutes their principal meal. To a stranger newly arrived, they appear as if just risen from a sick bed. Their voices are soft and spiritless, every step betrays languor, while their cheeks lack entirely the bloom of the rose. They have, however, in general, beautiful black hair and fine eyes and teeth. The peculiarities of the white creole are to be found also in the mixed race, with more of force and vivacity on the part of the latter, the women especially, as being less enervated by the climate. There may be observed also a marked distinction between the creole negroes and those imported from Africa. The former are more slender, agile, and graceful, though not less strong or capable of labor, with quicker perceptions and more volatile dispositions.—The dialects which have sprung up in tropical America, formed by the corruption of Spanish, French, and English, are generally called creole dialects. See on this subject "The Theory and Practice of Creole Grammar," by J. J. Thomas (Port of Spain, Trinidad, 1869), and *L'Histoire de Cayenne et la grammaire créole*, by M. de Saint-Quentin (1872).

CREON. I. A mythical king of Corinth, the father of the beautiful Creüsa, for whom the hero Jason deserted the enchantress Medea. When Creüsa was consumed by the burning robe sent to her by the sorcerer, Creon, who endeavored to embrace his daughter as the flames surrounded her, was also caught in the fire, and perished. **II.** A legendary king of Thebes, brother of Jocasta, whom he gave in marriage to Œdipus as a reward for his victory over the Sphinx, at the same time resigning his crown to the successful hero. Œdipus, ignorant of the fact that he was Jocasta's son, thus made that incestuous marriage the consequences of which form the theme of some of the greatest tragedies of the ancients. After the death of Œdipus Creon resumed the throne, and it was he who imprisoned Antigone for disobeying the edict which forbade the burial of Polynices.

CREOSOTE, an oily, colorless liquid, of a burning and bitter taste, and a peculiar smoky odor. It was first obtained by Reichenbach in 1830, among the products of the distillation of wood, and named from the Greek *κρέας*, flesh, and *σώζειν*, to preserve, in reference to its peculiar antiseptic properties. It possesses neither acid nor alkaline reaction. It boils at the temperature of 397°, and does not freeze

at 17° below zero. At 68° its specific gravity is 1·037. It evaporates without residue, leaving upon paper a temporary greasy stain, and upon the skin a white spot. In concentrated form it acts as a caustic. It may be inflamed from a candle, and then burns with much smoke. It is but partially soluble in water, but is itself a powerful solvent of the resins, fats, indigo, camphor, &c. Its composition is variously stated. According to Ettling, it consists of carbon 77·42, hydrogen 8·12, and oxygen 14·46. Its most remarkable quality is that for which it was named. Meats are preserved by soaking them in a dilute solution of creosote for a quarter of an hour, and then draining off the water and drying. Hams and tongues acquire a very delicate flavor after being immersed for 24 hours in a mixture of 1 part of pure creosote with 100 of water or brine. A process has been patented in England for impregnating salt with the volatile products of wood tar; meats prepared with it are both smoked and salted. It is the creosote in pyroligneous acid and in the smoke from wood that gives to these the property of curing meat. Either crude pyroligneous acid or wood tar may be used to furnish creosote. The liquid distilled off the latter divides into three layers, the lowest containing the creosote. The acetic acid also present in it is removed, after separating this layer from the other, by means of carbonate of potash. The oil which after some time collects upon the liquid is distilled, producing a heavy liquid, with other lighter fluids. The latter is agitated with phosphoric acid, and again distilled to remove ammonia. It is then mixed with solution of caustic potash of specific gravity 1·12, which dissolves the creosote, but leaves the eupione insoluble. This is decanted off. The liquid is then left for some time exposed to the air till it acquires a brown color. Sulphuric acid is then added, which sets the creosote free, so that it may be decanted; but it requires to be again treated with caustic potash and sulphuric acid, and the process repeated until the creosote, on exposure for some time to the air, ceases to turn brown. It still requires, after thorough washing with water, to be distilled from hydrate of potash, or from a strong solution of caustic potash. The first portions that come over are water, and are rejected. Creosote is known to be impure by turning brown on exposure to the air; strong acetic acid also detects its usual impurities, dissolving with the creosote, and leaving them floating on the surface.—As a medicine, creosote has been much used, but has recently been replaced to a great extent by carbolic acid. When undiluted it is an irritant and escharotic. In a weaker form it is an antiseptic of great efficacy, as shown above, and may be locally used as such in a great variety of diseases. When introduced into the cavity of an aching tooth, it relieves the pain by benumbing and to a limited depth destroying the nerve. In the dose of a fraction of a drop frequently repeated, it often proves useful in relieving nausea and vomiting, especially during pregnancy. It may also be applied as a hæmostatic. In an overdose it is a poison, giving rise, in addition to the symptoms dependent upon gastro-intestinal irritation, to giddiness, depressed action of the heart, convulsions, and coma, indicating a direct action upon the nervous centres. No antidote is known, and the only treatment is evacuation of the stomach and the use of stimulants. The poisonous action may arise from either its internal or external application.

CRESCENT (Lat. *crescere*, to increase), originally an epithet applied to the moon in its first quarter, when its disk is enlarging and its horns are acute. Any figure or likeness of the new moon was afterward termed a crescent, which became a favorite form for ornaments. The Syrian Astarte and the Greek Artemis were often represented with it placed horizontally over their brows, having its horns turned upward. An ivory crescent was worn as a sort of buckle for the cothurnus by wealthy Athenians, and Roman matrons used it as a decoration for the hair. The crescent was especially a Byzantine symbol, and when the Turks became masters of Constantinople they adopted it as an emblem of their growing empire.—In 1448 a military order of the crescent was instituted by King René of Anjou. It was composed of 50 noble knights, each of whom wore an enamelled crescent on the right arm, from which was suspended a number of small wooden columns equal to that of the combats in which he had been engaged. In 1799, after the battle of the Nile, the sultan Selim III. presented to Nelson a splendid crescent adorned with diamonds, which became a favorite ornament of the English admiral, who often declared himself a knight of the crescent. This circumstance induced the sultan to found in 1801 the order of the crescent, to be conferred as an honor upon foreigners who had deserved well of Turkey.

CRESCENTINI, Girolamo, a soprano singer, born near Urbino, Italy, about 1769, died at Naples in 1846. He was received with the utmost enthusiasm all over Europe, especially in Vienna. He was a favorite with Napoleon, who engaged him for his private chapel in Paris in 1806; but subsequently he returned to Naples, where he taught music, and published collections of exercises in musical vocalization.

CRESCENZI, Pietro de', an Italian writer on agriculture, born about 1230, died in 1320. He wrote *Opus Ruralium Commodorum*, containing not only his personal experiences and observations, but the best information that could be gained from the agriculturists of antiquity. It has been translated into several modern languages; the best Latin edition is that of Gessner (2 vols., Leipsic, 1735).

CRESS, the name of several species of plants, with acrid or pungent leaves, most of which

belong to the natural order *cruciferæ*. The water cresses (*nasturtium* and *sisymbrium*) are the most common varieties. They grow



Water Cress (Nasturtium).

abundantly on the banks of rivulets and small ponds, may be eaten as a salad, and are valued as antiscorbutic medicines.

CRESSON, Elliott, an American philanthropist, born March 2, 1796, died Feb. 20, 1854. He was a merchant in Philadelphia, and a member of the society of Friends. His attention was especially turned toward the Indian and negro population of the United States. At one time he proposed to become a missionary among the Seminoles of Florida, and afterward engaged in establishing the first African colony of liberated slaves in the territory of Bassa Cove. In the winter of 1838–'9 he made the tour of the New England states as agent of the national colonization society, and he spent the next winter in a similar mission in the southern states. He visited England in 1840–'42, and again in 1850–'53, in order to further the project of colonization. By his will he left about $122,000 to be distributed among various benevolent institutions, besides a landed estate of more than $30,000 to establish a home for aged or infirm merchants, and gentlemen who had become impoverished.

CRESSY. See Crécy.

CRESWICK, Thomas, an English landscape painter, born in Sheffield in March, 1811, died at Bayswater, Dec. 28, 1869. He studied art in Birmingham, and afterward in London. His first pictures were exhibited at the royal academy in 1828. He became an associate of the academy in 1842, and a member in 1851. He is best known by his drawings of English scenery and the paintings "The Weald of Kent," "Home by the Sands," and "The London Road a Century ago."

CRETACEOUS GROUP (Lat. *creta*, chalk), a series of stratified rocks forming the upper division of the secondary formation, distinguished as containing the last strata of which the fossil animal remains are wholly of extinct species. The group is subdivided into upper and lower; the former is often called from its principal member the chalk, and the latter for the same reason the greensand. The group underlies the tertiary beds of the London and Paris basins, rising up toward the straits of Dover on each side, along the coast of which its white chalk cliffs form prominent objects in the scenery. The formation is represented in New Jersey by beds of yellowish limestone and of greensand, which contain fossil shells, some of which belong to the same species, and most of them to the same genera, with those found in the cretaceous rocks of Europe. The same genera of fish also are common to the group of the two countries. The formation is traced through the eastern part of North Carolina and central part of Georgia, and after sweeping round the southern termination of the Alleghanies in Alabama passes through that state and Mississippi northward into Tennessee and Kentucky. It is recognized near Council Bluffs on the Missouri, in Texas, in the Rocky mountains, upon the Andes near Bogotá, and also in Hindostan. Thus at widely separated points in the ancient seas of four continents were similar deposits produced during the same geological period, characterized by the animal remains they include, of the same general type, and often of the same species. For the relations of this group to those which precede and succeed it, see Geology; and for further details regarding its members, see Chalk, and Greensand.

CRETE. See Candia.

CRETINS, persons in whom partial or complete idiocy is combined with great bodily deformity. The name cretin is of uncertain origin. Virey derives it from *chrétien*, Christian, because the inhabitants of the countries where cretinism prevails were very generally disposed to regard the cretins as incapable of sinfulness ("souls without sin," they call them), and hence regarded them as favored of God, or "good Christians." Blackie derives it from the Romance or Grison *cretina*, a corruption of the Latin *creatura*, a creature; corresponding to the term *Geschöpf*, by which they are designated in some parts of Germany. The characteristics of the cretin, as given by Berchtold Beaupié, in his *Dissertation sur les crétins*, are: a large head, squat and bloated figure, bleared and hollow eyes, projecting eyelids, flat nose, and protruding tongue; the chest is narrow, back curved, limbs short and misshapen, knees thick, feet flat; the belly is loose, like a bag, the integuments being so relaxed that they cannot retain the intestines in its cavity. The cretin can scarcely walk, hear, or speak. He is greedy for food, and has the sexual instinct largely developed, in its most brutal form. This unfortunate class are far more widely distributed than has been generally supposed. Throughout the whole sub-Alpine region in Europe, as

well as in some of the more level regions, they are found in great numbers. The goitre or bronchocele, so prevalent throughout the whole of the Alpine countries, is often accompanied by cretinism, and is, with very few exceptions, always found on the cretin. Switzerland, and especially the cantons Valais, Vaud, Uri, Aargau, Grisons, and Glarus, seem to be the home of this frightful deformity. It is endémic in portions of Rhenish Prussia, Baden, Piedmont, Bavaria, Upper Austria, Würtemberg, Denmark, Norway, in the Alpine departments of France, in portions of Turkey and Russia, and in the highlands of Scotland. In Africa it has been found prevalent along the northern slope of the Atlas range. In Asia, the districts around the base of the Himalaya range furnish great numbers of cases, as well as China, Chinese Tartary, and Sumatra. In South America, cretins are found in considerable numbers on the eastern or Atlantic slope of the Andes; and scattered cases occur along the Alleghany, Green mountain, and Hoosac ranges in the United States. In some parts of Canada cases have also been observed. The number of cretins in the sub-Alpine districts of Europe, whether considered actually or relatively to the population, is frightfully large. In some localities in Switzerland, Rhenish Prussia, and the Alpine districts of France and Savoy, there are whole villages in which not an able-bodied man can be found.—The causes of cretinism are involved in some obscurity, though many of the ablest medical men in Europe have investigated the subject with great care. The localities in which it is most prevalent in the Alpine districts are low-lying valleys, narrow, and exposed to the direct rays of the sun but for a few hours each day, and usually having but one outlet. In these, the air is often stagnant and the heat intense; the water is also in some cases charged with mineral impurities, especially the salts of lime; the food of the inhabitants is often scanty in quantity, and inferior in quality; they are in many cases grossly intemperate, and intermarriage with near relatives, and those affected with goitre or incipient cretinism, is common. In some countries it occurs on open plains, but in other respects under circumstances analogous to those already named. The life of the cretin is usually short; few are found above 30 years of age, and any treatment having in view the improvement of their health must, to be of benefit, be applied to the young. The recovery of a patient beyond the age of 12 years is almost hopeless. The first thing to be accomplished is the removal of the young cretin, as soon as possible after the disease exhibits itself, to a pure bracing atmosphere. It has been ascertained that on the Alps the disease seldom occurs at an elevation of 3,000 ft. above the level of the sea, and never at the height of 4,000 ft. Hence, those who have attempted its treatment in Europe have preferred elevated locations. The treatment requires an abundance of pure water, for drinking, washing, and bathing; warm and cold baths and douches; friction of the skin with brushes and stimulating liquids, to rouse its action; warm clothing; gymnastic exercises; mineral tonics; nourishing food; iodine, cod-liver oil, and phosphates. Galvanism and electro-magnetism are also of benefit. The effort to develop the mind must follow the attempt to restore the body to a healthy condition. The method of training for this purpose is similar to that employed in the instruction of idiots. In 1839 Dr. Guggenbühl made the first systematic effort to treat cretinism. He opened an establishment at Abendberg, near Interlaken, in Switzerland, and treated the disease with some success. After his death his institution was abandoned. A few similar institutions have been established in Europe, and some schools for idiots also admit cretins; but the provisions for this purpose are far from adequate. A few years ago it was estimated that there were in Europe 50,000 cretins, while the institutions for their benefit had accommodation for only 250.

CREUSE, a central department of France, bordering on the departments of Indre, Cher, Allier, Puy-de-Dôme, Corrèze, and Haute-Vienne; area, 2,151 sq. m.; pop. in 1872, 274,663. It was formed from parts of the old provinces of Berry and Limousin, with the whole of Haute-Marche, and is traversed by the river Creuse, a tributary of the Vienne, from which it derives its name, and by other streams, none of which are here navigable. It is very mountainous, and contains granite, coal, gypsum, and potters' clay. The soil is poor, except in the N. E. part; agriculture is backward; the climate is damp and changeable; and the domestic animals are of an inferior breed. The crops of grain are insufficient for domestic consumption. Fruit, rape seed, and hemp, however, are raised abundantly, and quantities of honey are collected. The chief manufactures are carpets, tapestry, coarse woollen goods, cotton, leather, paper, glass, and porcelain. The department is divided into the arrondissements of Guéret, Bourganeuf, Boussac, and Aubusson. Capital, Guéret.

CREUTZ, Gustaf Filip, count, a Swedish poet and diplomatist, born in Finland about 1726, died in 1785. While Swedish ambassador to Paris, he concluded, April 3, 1783, a commercial treaty with Benjamin Franklin, as representative of the United States. On his return to Stockholm he was appointed minister of foreign affairs and chancellor of the university of Upsal. Gustavus III. purchased his library, which is now in the palace of Haga; and on April 26, 1786, the king in person pronounced his eulogy before a chapter of the Swedish order of the seraphim, of which Creutz was a member. His poems were published in 1795, including *Atis og Camilla*, a pastoral epic.

CREUZER, Georg Friedrich, a German philologist and antiquary, born at Marburg, March 10, 1771, died in Heidelberg, Feb. 16, 1858. He was the son of a bookbinder, commenced his

studies in his native city, and completed them at the university of Jena. After his return to Marburg he was appointed professor of Greek, and subsequently of rhetoric, poetry, and Greek literature; and in 1804 he became professor of philology and ancient history at Heidelberg, which post he held till 1845. The philological seminary, which was founded at Heidelberg in 1807 according to his plans, has since exercised a marked influence upon that branch of science in Germany. His literary fame rests chiefly on his *Symbolik und Mythologie der alten Völker, besonders der Griechen* (4 vols., Leipsic, 1810–'12). This work, which contends for a bold and mystical theory as to the extreme antiquity and oriental origin of the Greek mythological systems, drew upon the author a series of critical attacks from Hermann, Voss, Lobeck, and others. Among the most remarkable of his other publications are editions of Plotinus (3 vols., Oxford, 1835) and Cicero; *Die Historische Kunst der Griechen* (Leipsic, 1803); *Dionysus, seu Commentationes de Rerum Bacchicarum Originibus et Causis* (2 vols., Heidelberg, 1808); *Abriss der römischen Antiquitäten* (Leipsic, 1824); *Zur Geschichte altrömischer Cultur am Oberrhein und Neckar* (Leipsic, 1833); *Zur Galerie der alten Dramatiker* (Heidelberg, 1839); *Zur Geschichte der classischen Philologie* (Frankfort, 1854); and the autobiographical sketches *Aus dem Leben eines alten Professors* (Leipsic, 1848), and *Paralipomena der Lebensskizze eines alten Professors* (Frankfort, 1858). Several of his works have been translated into foreign languages.

CREUZNACH, a town and watering place of Rhenish Prussia, in the district of Coblentz, picturesquely situated on the Nahe, 8 m. S. of Bingen; pop. in 1872, 12,874. There are extensive salt works in the neighborhood, and mineral springs which, containing iodine and bromine in larger proportions than any other known, are very efficacious in scrofulous diseases. In the vicinity are the ruins of the castle of Ebernburg, destroyed by the French toward the end of the 17th century, in former times a place of refuge for Ulrich von Hutten, Melanchthon, and other friends of Franz von Sickingen, to whom it then belonged.

CRÈVECŒUR, Hector Saint-John de, a French agriculturist and traveller, born at Caen in 1731, died at Sarcelles, near Paris, in 1813. He spent six years in England studying agricultural and politico-economical science, and in 1754 went to America, and after travelling some time settled in New York as a farmer. During the revolution he was captured and sent to England as a prisoner, and after being exchanged went to Normandy. Subsequently he returned to the United States as French consul general for the states of New York, New Jersey, and Connecticut. He found his property destroyed by fire, and his wife dead; but his children had been well cared for by Mr. Fellowes of Boston, who had heard of their father's generous assistance to some American sailors cast away on the coast of Normandy. The seal of Hartford was engraved under his supervision about 1785, and used in conferring the freedom of that city upon himself and his two sons, and upon Lafayette and his son. He returned to France in the latter part of his life. He was a correspondent of the institute from its foundation. Besides a pamphlet in 1782 on his introduction of the potato into lower Normandy, and other anonymous writings, he published *Lettres d'un cultivateur américain* (2 vols., Paris, 1784), and *Voyage dans la haute Pensylvanie et dans l'État de New York* (2 vols., 1801).

CRÈVECŒUR, Philippe de, baron d'Esquerdes, a French soldier, born early in the 15th century, died at La Bresle, near Lyons, in 1494. He was in the service of the duke of Burgundy, and distinguished himself under Charles the Bold, after whose death he entered the service of Louis XI., of whom he remained a favorite even after his foolhardy conduct at the battle of Guinegate in 1479, which converted victory into defeat, and which afterward led to his losing his knightship of the golden fleece. He was successful in subsequent military and diplomatic undertakings, and signed in 1482 the treaty of Arras, which gave the two duchies of Burgundy and the county of Artois to the French crown. He worsted Duke Maximilian in Picardy, taking St. Omer and Thérouanne. Charles VIII., the successor of Louis XI., made him a marshal in 1492. As plenipotentiary he signed at Étaples the treaty of peace with England. Though disapproving of Charles's projects, he accompanied him on his expedition for the conquest of the kingdom of Naples, but died on the way.

CREWE, a town of Cheshire, England, 20 m. S. E. of Chester; pop. about 18,000. A few years ago it was an insignificant village, having in 1841 a population of 396; but it is now an important railway centre, from which diverge various branches of the London and Northwestern railway. This company has here extensive locomotive and carriage-making shops, rolling mills, forges, and general repairing works, which give employment to a large number of hands. The town is well built and paved, is lighted with gas, and well supplied with water. Among the public buildings are two churches, a number of chapels, a news room, library, assembly room, and baths. The houses built by the railway company for workmen are remarkably neat and comfortable.

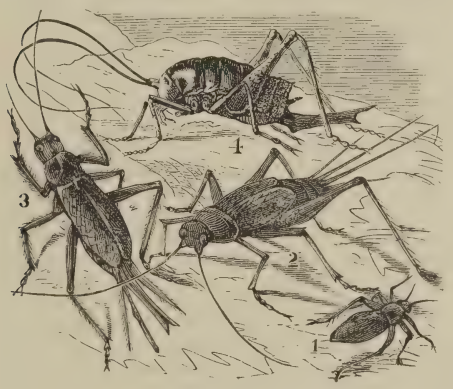
CRIBBAGE, a game played by two persons with a full pack of 52 cards. The points constituting the game, 61 in number, are scored by pegs on a board perforated with the necessary number of holes, called the cribbage board. The advantage lies with the dealer, who makes up a third hand for himself, called the crib, partly out of the hand of his opponent, to offset which the latter at the commencement of the game is entitled to score three points.

There is a variety of this game called three-handed cribbage, played by three persons with a triangular board. Four-handed cribbage is played by four persons in partnership of two and two, as in whist.

CRICHTON, James, commonly called the "admirable Crichton," born probably in the castle of Cluny, in Scotland, Aug. 19, 1560, died in Mantua, July 3, 1583. His father was lord advocate of Scotland, and his mother a Stuart of the lineage of the reigning family. At the age of 10 he was sent to the university of St. Andrews, then reputed the first school of philosophy in Scotland, where in his 12th year he took the degree of bachelor of arts, and in his 14th that of master; and, though the youngest of all, he was then esteemed the third scholar in the university. Before his 17th year he is said to have mastered the whole circle of science and of physical accomplishments. Soon afterward he went to Paris, where he challenged all learned persons to meet him in public disputation, proclaiming that he would "be ready to answer to what should be propounded to him concerning any science, liberal art, discipline, or faculty, practical or theoretical, not excluding the theological or jurisprudential habits, though grounded but upon the testimonies of God and man, and that in any of these 12 languages: Hebrew, Syriac, Arabic, Greek, Latin, Spanish, French, Italian, English, Dutch, Flemish, and Slavonian, in either prose or verse, at the discretion of the disputant." On the appointed day he encountered the gravest philosophers and divines in presence of over 3,000 auditors, acquitted himself with marvellous learning during a disputation of nine hours with the most eminent doctors, and was presented by the rector amid the acclamations of the assembly with a diamond ring and a purse full of gold. From this time he was known by the epithet of "the admirable." On the very next day he entered a tilting match at the Louvre, and bore off the ring from all competitors. After serving two years in the civil wars, he proceeded to Italy, and was in Rome in 1580. There, it is said, he gave another demonstration of his talents and knowledge in a disputation before the pope and all the highest dignitaries of the church and universities. He soon proceeded to Venice, where he was presented to the doge and the senate, and delivered before them an oration which was applauded for its eloquence and grace. He also disputed on questions of divinity, philosophy, and mathematics, with so much ability that Imperiali says "he was esteemed a prodigy of nature." After residing for four months in Venice, he went in 1581 to Padua, the fame of whose university was then spread throughout Europe. Here a meeting of learned men was convened in his honor. He began his performances with a poem, then held a public disputation for six hours on science, and concluded with an oration in praise of ignorance. Some one having charged him with being a mere charlatan, he caused a placard to be posted, in which he undertook to refute innumerable fallacies of Aristotle and the schoolmen, and to answer his antagonists on any topic which they might propose, either in the common logical way, or according to the secret doctrine of numbers and mathematical figures, or in any one of a hundred different species of verse. The trial was eminently successful, being styled "a miraculous encounter." He then went to Mantua, where he is said to have fought a famous gladiator, who had foiled the ablest masters of fence in Europe, and had recently slain the three best swordsmen in that city. Crichton, having challenged him, showed such dexterity in the fight that he seemed but to be in play, and at length pierced the heart of his opponent. The duke made him preceptor of his son, a riotous and passionate youth. For the amusement of his patron he composed a comedy, in which he himself represented 15 different characters. This was the last display of his extraordinary talents. On a night of the carnival he was assailed in the street by three armed persons in masks. Turning upon them with his sword, he at length disarmed the principal aggressor, who proved to be his pupil, the son of the duke. Crichton fell upon his knee and presented his sword to the prince, who pierced him through the body. Such is a summary of the incidents recorded of this youth. It is not improbable that they are greatly exaggerated. Four Latin odes, and a few prose fragments, which are all that remain of his compositions, do not convey an impression of remarkable power; yet there is historical evidence that he made great proficiency in knowledge and accomplishments.

CRICKET, an insect belonging to the order *orthoptera*, the group *saltatoria*, and the family *achetadæ*. Like other insects of the order, the crickets have straight wings, which, when not in use, are folded lengthwise along the back, the upper wings having a narrow border which is folded down so as to cover also the sides of the body; the jaws move transversely like those of beetles; they do not undergo a complete metamorphosis, the young resembling the parents except that they have no wings; in the pupa state they have the rudiments of wings, eat voraciously, and grow rapidly. In the *saltatoria*, which includes also grasshoppers and locusts, the thighs of the hind legs are greatly developed, enabling them to take long leaps. In the family to which the cricket belongs, the wing covers are horizontal, the antennæ long and tapering, the feet three-jointed (except *œcanthus*, which has four joints to the hind feet), two tapering downy bristles at the end of the body, between which, in the females, there is a long and sharp piercer. The common house cricket of Europe (*acheta domestica*, Linn.) is about an inch long, of a yellowish or clay color mixed with brown; it dwells in the cracks of walls and floors, and in warm places, as the vicinity of ovens, where it

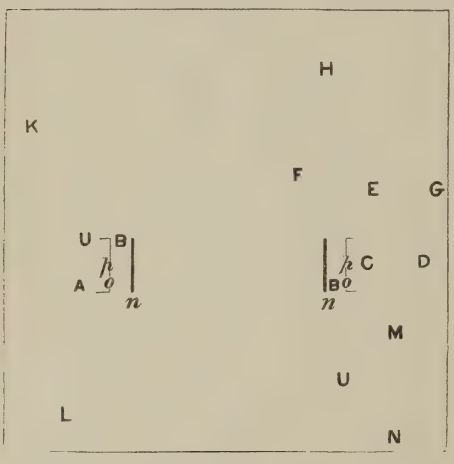
remains concealed during the day, coming forth at night in search of bread, meal, and almost any article of domestic economy which contains moisture; it is said also to devour other insects. The female has a long ovipositor, and the male makes a loud noise or chirp by rubbing the hard internal border of one wing cover against a horny ridge on the under surface of the other; for this familiar sound the cricket has been immortalized in verse and prose, and its merry chirp is interwoven in some of the most cheering superstitions of England; its very presence in a house was deemed a sign of good luck, and its flying away a bad omen. It is a most indefatigable musician, commencing its tune at twilight and keeping it up without intermission till daybreak; its note is so agreeable to some that it is kept in cages by the fireside as a pet songster, and Scaliger is said always to have had a box of them singing on his table, though this last refers more particularly to the field cricket. This species (*A. campestris*, Fabr.) is larger than the preceding, of a blackish hue, with the base of the wing covers yellowish; in July the female lays about 300 eggs, which are hatched in 15 days; the young have no wings, and feed on vegetable matters, changing their skins before winter; they remain torpid in winter, and become perfect insects in the following June. This species is spread over Europe, where it affords great sport to children, who hunt for it with an ant attached to a hair; from the eagerness with which it comes out of its hole in the earth when any foreign body is presented to it, thus falling into the hands of its enemies, has arisen the expression prevalent in France, "silly as a cricket;" in England people say "merry as a cricket." Their holes are made at first horizontal and then vertical, and they retreat into them backward; they eat grass, seeds, and fruit, carrying them to their holes; they are fond of drinking the dew on leaves and flowers, but are very careful to avoid wetting themselves in their journeys. The young live together in peace under stones and sticks, but when they have attained full size they are constantly fighting with each other; the field crickets are sometimes made use of in ridding a dwelling of house crickets, the larger instantly declaring war against the smaller species and driving them out. The boys in Germany are very fond of keeping crickets in boxes for the sake of their song, and for the purpose of making them fight; what the game cock is to the Havanese, and the bulldog to the English, the cricket is to the youth of Germany; according to the direction in which they meet, they will butt like rams, kick like horses, or scratch like cats, never ceasing till one leaves the field or is disabled.—There are several species of cricket in America, though there is no house cricket. Our common field species (*A. abbreviata*, Harris) is named from the shortness of its wings, which do not extend beyond the wing covers; it is about three fourths of an inch long, black with a brownish tinge at the base of the wing covers, and a pale line on each side most distinct in the female. Another species (*A. nigra*, Harris) is entirely black with very short wings, and measuring three fifths of an inch in length. Crickets are generally nocturnal and solitary, but some species are often seen in the daytime crawling along garden paths in great numbers. Our nocturnal crickets do not excite the same pleasant associations as the European species do; they do not enter houses unless by accident, and their monotonous notes, continued during the autumn nights, are to most persons dismal and sad. Where crickets are numerous, they injure vegetation, eating the tenderest parts of plants, destroying great numbers of melons, squashes, potatoes, &c.; they devour other insects, and thus in a certain degree are of service. They may be destroyed by arsenic mixed in grated vegetables, or in bottles partly filled with fluid, into which they crowd to drink; cats are fond of them, playing with them like mice before eating them; swine also devour them eagerly. There is here a third species (*A. vittata*, Harris, genus *nemobius* of Serville), destitute of wings, varying in color from rusty black to dusky brown, with black lines on the back and posterior thighs; it is about two fifths of an inch long, social in its habits, frequenting the meadows and roadsides in the daytime. There is another kind inhabiting shrubs, vines, and trees, concealing itself in the daytime among the leaves; these are very noisy, and if one gets into a chamber it will effectually prevent sleep; the antennæ and legs are very long and slender, and the piercer is only half as long as the body. They form the genus *œcanthus*, and are called tree or climbing crickets; there are three species in the United States, of which the *Œ. niveus* inhabits Massachusetts. The male is of a pale ivory color, with the upper side of the first joint of the antennæ and between the eyes ochre yellow, and a minute black dot on the under side of the first and second joints of the



1. Wingless Cricket (Acheta vittata). 2. Field Cricket (A. abbreviata). 3. House Cricket (A. domestica). 4. A. maculata.

antennæ; the length is about half an inch. They sometimes pierce peach twigs for the purpose of laying their eggs, and they injure the tobacco plant by eating holes in the leaves. They are difficult to catch, from their extreme shyness. The eggs are laid in the beginning of autumn, but are not hatched till the following summer; they attain maturity by the first of August, and in southern climates before that time. The females are the largest, almost white, dusky beneath, with three dusky stripes on the head and thorax, and the wings with a greenish tinge and larger than the covers.

CRICKET, the favorite athletic game in England, also played in America. Under the name of "club ball," or "hand-in and hand-out," it was played as early as the 14th century; but the name cricket cannot be traced further back than 1685, when it occurs in Phillips's "Mysteries of Love and Eloquence." It has become the national game of England



A. Bowler. B, B. Batsmen. C. Wicket keeper. D. Long stop. E. Short slip. F. Point. G. Long slip. H. Cover point. K. Long field off. L. Long field on. M. Short leg. N. Long leg. U, U. Umpires. *n, n.* Popping creases, 4 ft. in front of wickets. *o, o.* Bowling creases, 6 ft. 8 in. in line with wickets. *p, p.* Wickets, 22 yards apart.

within a century. In America, though often played, it has never gained the same importance, and is second to base ball in popularity. The game, to be played scientifically, needs a level piece of ground, from six to ten acres in area, with a close sod, which must be frequently mowed and rolled. The necessary implements are a ball, which must be not less than 9 nor more than 9¼ in. in circumference, and must weigh not less than 5½ nor more than 5¾ oz.; the bat, which must not exceed 4¼ in. in width nor 38 in. in length; three stumps, or short upright rods of wood, which are set up in the ground to form the wickets, and must be of equal thickness, standing 27 in. out of the ground, and so placed, equidistant from one another, that the ball cannot pass between them. Across the top are the bails, composed of two pieces of wood, each 4 in. long. Cricket is played either as single or double wicket. The former (not often played) requires not less than two nor more than eight on a side; the latter must have eleven on one side, and as many or more on the opposite. Eleven picked players often contend with and defeat 22. The accompanying diagram will give a general idea of the positions in the field when the bowling is moderately fast. The fielders (whose duty it is to stop and return the ball) have, as will be seen by the references connected with the diagram, technical names, usually indicating their stations in the game. These positions are varied to suit slow and very fast bowling; and in fact each bowler disposes the field to suit his own particular style and the batsman's play. The game is begun with the outs placed in the field as shown above, and two ins, one at each wicket. The bowler, A, now bowls the ball at the opposite wicket, which is defended by the batsman, B, who if the bowling admits strikes the ball to such a part of the field as will enable him to make one or more runs, *i. e.*, to cross from wicket to wicket as many times as possible before the ball is secured by the fielders and returned to the bowler or wicket keeper; then the bowler delivers another ball, and so on till he has bowled four, which constitute "an over." After this another bowler commences at the opposite wicket, the fielders having assumed the same relative position to him that they held to his predecessor. This second bowler delivers four balls, when the same change takes place, and continuously till all the batsmen have been put out. This must be done either by their having the bail or bails of their wickets knocked off, or the wicket or wickets knocked out of the ground, either by the bowler when bowling, or by a fielder throwing and knocking them down while the batsman is outside the popping crease, or by the ball's being caught when hit before it touches the ground. The batsman is also out if he knocks down his wicket with his bat, or if the ball is stopped by any part of his body before his wicket; and several other means by which he may go out are indicated in the rules (15 to 24). After each side has had two innings, the one making most runs is declared victorious. The batsmen when playing against fast bowling use leg guards for the protection of the legs, and gloves for the hands. The gloves are made of buckskin, with rubber tubing attached to the exposed parts. The wicket keeper is also protected by gloves and leg guards. Flannel trousers and shirts are invariably worn. For other particulars see the laws of cricket as revised by the Marylebone club, the highest authority in the game, and also the following books: "The Cricket and the Field," "Felix on the Bat," and Lillywhite's "Guide to Cricketers."

CRILLON, a French family, derived from the Piedmontese Balbes who emigrated to France in the 15th century. **I. Louis des Balbes de**

Berton de Crillon, born at Murs in Provence in 1541, died Dec. 2, 1615. He was the first to assume the name of Crillon, from a small estate of that name situated in the present department of Vaucluse. Having become famous by his exploits, the name was adopted by the whole family. As the youngest of six brothers, he was destined for the order of the knights of Malta, studied with zeal and diligence at the school of Avignon, and eagerly pursued bodily and chivalric exercises. Under Francis de Lorraine, duke of Guise, he completed his education as a warrior and cavalier in his 16th year. Under the command of the duke he was the first to scale the walls of Calais, which had been for two centuries in the hands of the English, and was taken in 1558 after a siege of eight days. He equally distinguished himself at the capture of Guines. He was presented by his commander to Henry II. as the chief instrument of his victories, and richly rewarded by numerous clerical estates, it being at that period customary in France to bestow benefices on laymen, to be managed for their benefit by members of the clergy. In the ensuing civil wars of France he served against the Huguenots, defeating the conspiracy of Amboise formed against the Guises (1560), and fighting in the battles of Rouen, Dreux, St. Denis, Jarnac, Moncontour, and St. Jean d'Angély. As a knight of Malta he fought under Don John of Austria off Lepanto against the Turks (1571), was wounded, and sent with the news of the victory to Charles IX. of France and Pope Pius V. Already called "the brave" by the court of France, and "the man without fear" by the army, he became the object of general admiration. He took no part in the massacre of St. Bartholomew's, though he continued to serve against the Huguenots. The duke of Anjou, brother of the king, having been elected king of Poland (1573) after the extinction of the house of Jagiello, Crillon followed him to that country through Germany, where he defended him against the insults of the Protestants, and accompanied him on his flight thence when he succeeded as Henry III. to the throne of France. On his return he was distinguished with new honors by the cities of Venice and Lyons. When, after the battle of Coutras (1587), Henry III. openly commenced hostilities against the league, and the states assembled at Blois decreed the assassination of the duke of Guise, who had succeeded his father in the leadership of the Catholics, the monarch offered Crillon the honor of killing the duke, which he refused. He afterward fought for the king against the league, and after the assassination of Henry III. served with equal fidelity Henry IV. The battle of Ivry (1590) ended his services in the civil wars. In the war against Spain Crillon was active again. The peace of Savoy ended his military career, and he retired to Avignon. The chivalric bravery of Crillon was equalled by his generosity, which prompted him even to pardon an attempt at his own assassination. The estates of the family were inherited by THOMAS, the third of the brothers, and made in the fourth generation a duchy by Benedict XIII. **II. Louis,** second duke de, born in 1718, died in Madrid in 1796. Having entered the French army at the age of 13, he fought under Villars in the campaign of 1733 in Italy, and distinguished himself in Germany. Entering the Spanish service in 1762, he conquered Minorca (1782), and was rewarded by the title of duke of Mahon. He commanded at the unsuccessful siege of Gibraltar, and afterward became captain general of the provinces of Valencia and Murcia. His *Mémoires militaires* (Paris, 1791) contain many particulars valued by men of military science.

CRIMEA (Russ. *Krym*), a peninsula at the southern extremity of the Russian empire in Europe, forming a part of the government of Taurida, between lat. 44° 25′ and 46° 10′ N., and lon. 32° 30′ and 36° 40′ E.; greatest extent from E. to W. 190 m., from N. to S. 123 m.; area, 7,654 sq. m.; pop. about 200,000. This peninsula is connected with the main body of the empire by the narrow isthmus of Perekop, the breadth of which is about 4 m. The Crimea, in consequence of its geographical, commercial, and strategical position, is one of the most important divisions of the empire, commanding as it does the navigation of the Black sea. It has a coast line of 650 m. Along its N. E. shore there extends a long and narrow inlet of the sea of Azov, from which it is separated by a tongue of land, or rather a sand bar, about 70 m. long and 1 to 1½ m. wide. This inlet is so shallow that in some places it has the appearance of a morass, and its name (Sivash, or Putrid sea) indicates its general aspect. The eastern part of the Crimea forms a minor peninsula, stretching eastward to the strait of Yenikale, the Cimmerian Bosporus of the ancients. While the N. portion of the peninsula is only a continuation of the steppes of S. Russia, mostly barren, cheerless, and swept by chilling winds, the S. portion, sloping from a mountain chain which stretches from Sebastopol to Kaffa as a barrier to the north winds, enjoys a semi-tropical climate, which is particularly delightful in spring, and a great richness and variety of vegetation. Hence the N. portion has from time immemorial been occupied by nomadic tribes, eking out a scanty subsistence by cattle raising; while on the S. slope higher forms of culture have been developed by the Greeks, the Genoese, the Tartars, and the Russians, successively. There is only a comparatively narrow belt of arable soil on the N. slope, and on this belt the most important towns are situated, such as Sebastopol, Bakhtchiserai (the old capital of the Tartar rulers), Simferopol, Staroi Krym, and Karasu-Bazar. To the northward of this belt extends the steppe, its monotony relieved only by numerous herds of cattle, and thousands of cranes, storks, and gulls, swarming

around the salt-water lagoons and marshes. The climate of this region is not as healthy as the more southern part, the winters being cold and damp and the summers excessively warm; it is also subject to sudden changes from long droughts to severe rain storms. The Tauridian mountain chain (Yaila) appears to be a western continuation of the Caucasus, from which it is separated only by the strait of Yenikale. It rises almost precipitously from the sea, girdling the whole southern coast. At the Tchatirdagh, or Tent mountain (anc. *Trapezus Mons*), it attains an elevation of 4,980 ft. above the sea, and terminates to the southward of Sebastopol in the promontory called Crion Metopon (Ram's Face) by the Greeks and Ai Burun (Holy Cape) by the Tartars. As it advances toward the north it divides into several parallel chains, which gradually decline in elevation till lost in the northern steppes. This range presents a succession of lofty mountains, picturesque ravines, and wide basins, well watered and teeming with vegetation. Wherever the slope of the hillsides is not too steep, they are covered with vineyards and country houses; the valleys, watered by numerous small streams, produce rich crops of grain and fruit. The mountains abound in valuable timber. The steppe, on the other hand, is mostly destitute of fresh-water springs and rivers, and its soil is generally impregnated with salt. It abounds, however, in excellent pastures.—The two principal rivers of the Crimea are the Salghir, which rises S. E. of Simferopol, and, flowing mainly N. E., empties into the Putrid sea, and its S. affluent the Karasu. Of the smaller streams, the Alma and the Katcha, running W., N. of Sebastopol, are chiefly to be noticed.—The products of the peninsula are varied. Maize, hemp, tobacco, and almost all European and tropical fruits are produced. Of wild animals, only deer, wolves, badgers, foxes, hares, weasels, and jerboas are found. Camels are employed on the northern steppes, where also buffaloes and oxen, sheep and goats, are raised. The horses of the Crimea are more remarkable for activity and intelligence than beauty. The birds most common are crows, owls, thrushes, blackbirds, partridges, quails, kingfishers, pigeons, poultry, geese, swans, ducks, teals, and gulls. Among the insects, the hideous *rana variabilis*, scorpion, tarantala spiders, centipedes, and scolopendras may be mentioned. Bees are abundant. Fish abound on the coast, but not in the rivers. The salt manufacture is monopolized by government; the most celebrated salt mines are those of Perekop, Eupatoria or Kozlov, and Kertch. The grape has been of late years extensively cultivated, and produces some excellent wines, vines being imported from Burgundy, Champagne, the Rhine, Hungary, Spain, and Portugal. The principal forest trees are the oak, beech, plane, poplar, and ash. In consequence of the thinness of the population and their aversion to labor, the Crimea produces but a very small part of what it might do. The Tartars, who form the bulk of the population, though they have renounced their roving habits, have not much aptitude for husbandry. Besides milk and other animal food, they subsist chiefly on millet. The mineral wealth of the Crimea is insignificant. There are a few coal mines, porphyry, and fine red marble. The industry of the country is also unimportant; cutlery, morocco, lamb-skin caps, saddles, blankets, carpets, sacks, and cordage are manufactured. Commerce is likewise limited, and is chiefly carried on by Greeks and Jews. The principal articles of export are salt, wine, honey, wax, leather, hides, wool, lamb skins, and morocco leather; and an active transit trade exists, corn, seeds, tallow, tobacco, and silk being brought here for barter with European, and especially Russian manufactures. The peninsula is divided into four districts: Simferopol, Feodosia, Yalta, and Eupatoria. The capital, Simferopol, or Akmetchet, has 17,000 inhabitants, and has lost all vestiges of its former splendor as a residence of the Tartar khans. It had been outgrown by Sebastopol before the destruction of that place in 1855, and by Eupatoria (Kozlov), Bakhtchiserai, Feodosia (Kaffa), and Kertch. The last, situated on the strait of Yenikale, which is often designated as the strait of Kertch, is almost the only town in Russia that is built entirely of stone; its population amounts to about 20,000. Karasu-Bazar, situated N. E. of Simferopol and containing about 15,000 inhabitants, is the principal seat of what little industry the Crimea can boast of. The population of the peninsula is a mixture of the Tartar, Greek, Italian, and Slavic nationalities. There are, besides, Armenians, Caraite Jews, Greeks, gypsies, and also German colonies established since 1804. The Tartars (Mohammedans), in former times so numerous that they were able to muster 100,000 warriors, still constitute the principal part of the population.—The aboriginal inhabitants were the Cimmerians. About the 7th century B. C. their country was invaded by other Scythians and they were driven to the mountains, where they received the name of Tauri; hence its ancient name Tauris, or Chersonesus Taurica. It was celebrated in the legends of Iphigenia and Orestes. About the 6th century B. C. Greek colonies from Miletus settled here, and founded Theodosia (now Feodosia or Kaffa), Panticapæum (now Kertch), and other cities; and the Heracleans who settled on the S. W. part of the peninsula founded Chersonesus. It was the chief part of the kingdom of the Bosporus, the struggles between the Greeks and Scythians continuing till about 112 B. C., when Mithridates acquired possession of the peninsula, and made Panticapæum the capital. (See Bosporus.) It was subsequently conquered by the Sarmatians. Early in the middle ages it belonged to the Byzantine empire. Toward

the end of the 12th century the Genoese and Venetians obtained a foothold. The Tartars overran the peninsula in the 13th century, and maintained their rule for more than 200 years, when they became subject to the Ottomans. All their municipal institutions were left undisturbed by the conquerors, who even allowed them to retain their own khans (princes), though as vassals of the sultan. In the latter portion of the 17th century the Russians began to covet the Crimea. In 1736 they first invaded it under Marshal Münnich, and in 1771 they made another invasion under Dolgorouki. They succeeded so far as to wrest it from Turkey and clothe it with a nominal national independence under the khan Shahin Gherai, who in 1783, having been expelled by the anti-Russian party, ceded his country to Russia; and in 1784 the peninsula and its adjoining provinces were annexed to the empire.—In 1854–'5 the Crimea was the principal theatre of the war (begun on the Danube in 1853) between Russia and the allied powers England, France, Sardinia, and Turkey. The armies of the allies, consisting of 65,000 men with 5,000 horses and 80 pieces of artillery, effected a landing at the bay of Eupatoria, Sept. 14, 1854. On their southward march toward Sebastopol they encountered the Russian forces, commanded by Prince Menshikoff, on the heights on the southern bank of the Alma. A bloody battle was fought (Sept. 20), in which the Russians were compelled to retreat. Menshikoff fell back on Sebastopol, where he made preparations for the defence of the fortress, and on the night of the 24th marched to Bakhtchiserai to unite with the advancing reënforcements. On Sept. 25 the British forces seized Balaklava, and on Oct. 9 the regular siege of the southern portion of Sebastopol commenced, the first batteries opening fire upon the town on the 17th. The Russians had sunk vessels in the entrance to the harbor, rendering the city unassailable by maritime force. On Oct. 25 and Nov. 5 the Russians attacked the besieging forces in the battles of Balaklava and Inkerman, but afterward confined themselves mainly to the defensive, the frequent sorties being intended more to harass and retard the siege than to relieve the place definitively. Among these conflicts some assumed almost the character of regular field battles; such were the unsuccessful attack of the French upon a new redoubt (Feb. 23, 1855), their first assault upon the Malakhoff and Redan (June 18), and the battle of the Tchernaya (Aug. 16), in which the Russians, numbering 50,000 infantry and 6,000 cavalry, made a last effort to break the aggressive force of the enemy. The trenches having been driven so near the Russian defensive works that another assault could be ventured, the final bombardment was opened Sept. 5, and lasted for three days. On Sept. 8 the Malakhoff and Redan were stormed and taken by the allies after a desperate struggle. The Russians, after having blown up their extensive fortifications on the southern shore of the harbor, retreated to the north side, which the allies never seriously attempted to capture. The latter, having destroyed the costly docks, arsenals, and ship yards of Sebastopol, remained inactive in their camp, and, with the exception of the capture and sack of Kertch, no further feats of arms were accomplished. The forces of the allies were withdrawn in the summer and autumn of 1856. Since the war the Russians have made considerable efforts to restore Sebastopol, and it has been rebuilt on an improved plan, and will doubtless again become a great naval arsenal.—See Kinglake, "History of the Crimean War" (London, 1863–'8).

CRIMINAL LAW. This branch of jurisprudence is the earliest in development, but the latest to be reduced to a rational and consistent system. The predominance of penal laws may be seen in the early legislation of every nation; for in a rude state of society personal violence is the most pressing subject for which laws are required. Laws are accordingly enacted for the emergency, and, as might be expected, having reference to the immediate occasion, they partake rather of blind popular impulse than the calm deliberation of legislative wisdom; not that the laws are in fact dictated by the will of the people, but the legislators themselves are under the influence of the same prejudices that actuate the popular mind. The consequence is, that excessive severity at first prevails, which in the course of time is meliorated by evasion of the laws, and the contrary extreme of undue laxity has in many instances succeeded. The latter effect can be guarded against only by a timely revision of the laws, and an accommodation of them to the more humane views resulting from an advance of civilization. But the practical wisdom required for such a revision is the very latest growth of civilization, and belongs to the highest branch of political science. It has indeed been erroneously supposed that criminal law is extremely simple as compared with the laws relating to property. This idea has grown out of the fact that legislation respecting crimes has by necessity been called for when as yet the state of society was unsettled. Laws were made for individual cases, and by consequence were destitute of sound legal discrimination; yet by long use, and for want of the capacity required for systematic review and amendment, they have become fixed in all their incongruity. This irregular character of criminal laws is not peculiar to one or a few nations, but is observable in all systems of jurisprudence which have not in a later and more mature age undergone revision. Hence criminal law has more a statutory or positive character than the more gradually developed system of laws affecting property. In the absence of general principles and of all harmonizing method, each statute or provision of law is isolated, distinct, and positive, and therefore precludes all reasoning by analogy and all modifi-

cation for the sake of conformity to the changing circumstances of society. So far, then, criminal law may be said to be simple, inasmuch as each statute is the law of the particular case referred to, and there can be no expansion or reproduction by analogy. Yet there are principles applicable to this branch of the law which may, in like manner as the elementary rules of civil law, be developed into a harmonious system. Another peculiarity of criminal law, or rather of its administration at an early period, is the want of discrimination as to the palliative circumstances of crime. Motives are comparatively little considered in early penal laws, or in the judicial proceedings founded upon them. Gibbon's remark, that "the life or death of a citizen is determined with less caution and delay than the most ordinary question of covenant or inheritance," is true only of a jurisprudence which has retained its early crude legislation respecting crimes without subsequent revision. To a considerable extent this was the state of the English criminal law at the time Gibbon wrote, but it has since that time undergone a radical change. There is a third characteristic of the early administration of criminal law, viz., the comparative disregard of the rules of evidence. The fact of being charged with a crime, especially if there be some strong circumstance of suspicion, naturally induces a prejudice against the accused. He is deemed guilty until he proves himself innocent; contrary to the more humane axiom of a later age, that a man is to be deemed innocent until he is proved to be guilty. The patient investigation of a case, the careful weighing of all the evidence, particularly that which is derived from circumstances, and the impartial judgment unswayed by popular excitement or the exacerbated passion of the injured party, belong to a more advanced stage of civilization and jurisprudence. Illustrations of the foregoing remarks will be found in the penal laws of nations the most celebrated for their legislation. The laws of Draco, which on account of their undiscriminating severity were said to have been written in blood, are not to be deemed the mere expression of the cruel heart of the legislator, but rather the reflection of the sanguinary disposition of the Athenian people at that period. So the decemvirs who prepared (perhaps merely compiled) the twelve tables did not declare crimes nor impose penalties abhorrent to the popular disposition, but rather were actuated by the same impulses and prejudices which prevailed in the minds of the people. It was not indeed a democratic influence, for some provisions were made expressly for the support of patrician power over the plebeian commonalty; but, allowing a certain degree of discrimination in the estimation of crimes as affecting one or the other class politically, the code of the decemvirs may be assumed to be a fair expression of the temper of the Roman people. Upon analysis of these celebrated laws, all the defects which we have specified as incident to early legislation become apparent. The penal largely predominates over the civil, and in respect to crimes and their penalties there is an absence of what we should deem a just discrimination respecting the relative measures of crimes and the punishment due to each, and there is a want of due regard to motives or other palliative incidents. Mutilation of the person was punished by the retaliatory infliction of the same injury upon the wrong doer. A false witness was to be thrown headlong from the capitol. The killing of a man, or making use of magical words to hurt him, or the preparing of poison for him, or giving it to him, were subject alike to the penalty of death. A parricide was adjudged to be sewn up in a sack and thrown into the river; the addition to the contents of the sack of a cock, a viper, a dog, and an ape, were the fanciful devices of those who executed the law, and not prescribed by the law itself, though in the Institutes of Justinian they appear as if the whole had been originally so enacted. Slander by words or defamatory verses was punished by beating with a club, and the authorities cited by Gibbon seem to prove that the punishment extended to death. This was undoubtedly a political law, intended in the first instance for the protection of the decemvirs themselves against any rude complaint by the people. It remained, however, unrepealed, though, like other enactments, probably unexecuted, except for tyrannical purposes. The treading down of another's corn field at night was punished with death; but the cutting down of trees, whatever might be the value, was subject to a mere fine of 25 pounds of brass. But the most apt illustration of the irrational severity of these laws was the treatment of an insolvent debtor, who, without any other imputation of fraud than the fact of owing the debt and not having paid it, could be taken home by the creditor and kept 60 days, fettered with irons not exceeding 15 pounds in weight; at the end of which time, if the debt remained unpaid, he could be brought before the people on three market days, on the last of which his body could be cut into pieces according to the number of creditors, or, if they preferred, he could be sold into foreign slavery. The excessive severity of a law defeats the very object had in view in enacting it. "The criminal code of the decemvirs," says Gibbon, "was abolished by the humanity of accusers, witnesses, and judges; and impunity became the consequence of immoderate rigor." Magistrates were prohibited from inflicting on a free citizen any capital or even corporal punishment. All cases affecting the life or liberty of a Roman citizen were, by the laws of the twelve tables, to be tried by the *comitia centuriata*. The multiplication of these cases led to the giving power annually to the prætors to sit in judgment on state offences, with a certain number of judges drawn from the rolls of citizens; and new prætors were appointed with special powers for the trial of offences relating only to in-

dividuals. There was a general amelioration of the laws by the operation of these different provisions. As there was no arrest until sentence had been pronounced, the judgment could be evaded by going into voluntary exile, and the interdiction of fire and water (*i. e.*, exile) became the extreme limit of judicial severity even upon conviction in capital cases. A new administration of criminal law was, however, introduced with the imperial government. The senate was made the instrument of imperial power for the condemnation of criminals charged with offences against the state; and the ordinary magistrates became invested with powers which under the republic had been reserved to the people, either in the *comitia* or in the popular body of *judices*, who sat with the prætor. Any Roman citizen might be a public accuser and prosecute criminal actions, but it seems not to have been usual, except when some political object was sought, or where the accuser had some relationship to the injured party, either by blood or professionally, as in the case of patron and client. It was a peculiarity of the Roman criminal law that, however mild it became in respect to free citizens, it was enforced against slaves and foreigners with all the stringency of its ancient severity.—The laws of the Germanic nations equally illustrate the propositions above stated, and especially the absence of all classification of crimes, and the disproportion of penalties to the different degrees of moral turpitude. The Salic law contained 343 penal articles, and only 65 on all other subjects. Of the penal laws, 150 related to cases of robbery, 74 of which referred to the stealing of animals; cases of violence against the person were the subjects of 113 articles, of which 30 related to mutilation of the person, and 24 to violence against women. The want of generalization is noticed by Guizot, as proving defect of intellectual development and the precipitation of the legislator in enacting laws: "Every case of robbery, of violence in the very fact, is taken hold of in order to immediately inflict a penalty; and there was no idea but of adding a new article of law whenever a new crime was committed, however trifling its difference from those which had been already provided for." Yet these laws present the same contrast that we have seen in the Roman, in the mildness of the penalties inflicted upon free men, and the cruelty of the punishments to which the slaves and even bond laborers (*coloni*) were subject. Composition (*wehrgeld* or *wiedergeld*), a pecuniary mulct, was the penalty enforced upon a free man, varying in amount with the atrocity of the offence; but upon slaves and laborers tortures and death were freely inflicted. Similar provisions were contained in the laws of the Ripuarian Franks, the Burgundians, and the Anglo-Saxons. It was, however, understood that the injured party had a right to refuse composition, and to seek satisfaction by his own hand; which last alternative was regulated by certain rules, and hence received the designation of judicial combat. This was a peculiar feature of the Germanic law, and was not confined to criminal cases, but became a common mode of deciding questions of fact even in civil suits; and the right was reciprocal, that is to say, either party had the right to call the other to a decision of the controversy by combat. So either party had the right to challenge witnesses, and even judges, to combat, upon the allegation that the testimony was untrue or the judgment unjust. Montesquieu maintains that the judicial combat was introduced as a natural consequence of what he calls negative proof, that is, the denial of the charge by the party under oath, which was a purgation in criminal cases, and was also admitted in civil cases with the addition of the oaths of a certain number of others, called *conjuratores* or *compurgatores*, who merely deposed that they believed the party. The defect of this kind of proof, as well as of the other mode of determining facts, viz., by ordeal, rendered the trial by combat a necessity; at least it was far more satisfactory to the rude minds of that period than either of the others, in which perjury and deception were palpable. Another mode, which was much in vogue among the Anglo-Saxons, and which was maintained for a long period in the English law, was the compurgation before alluded to. Whether the compurgators were the same as the *sectatores* spoken of in the Saxon laws is uncertain. It has been supposed by some writers that they had a function somewhat similar to that of the *juratores* of a subsequent period. In one respect they were alike, inasmuch as they stated upon oath their opinion of the case, which opinion was not founded upon evidence, but upon some private knowledge which they were supposed to have of the matter in controversy. The proceeding by compurgators was called wager of law, which took the name from the formality of giving gage or security that the party would at a certain day make his law, that is, that he would take an oath and bring 11, or as some authorities say 12, compurgators to swear that they believed him. In modern practice it seems to have been admitted only in an action of debt, instances of which may be seen in 2 Salk., 682, and 2 Barn. and Cress., 538; but at the period of which we speak it was a method of proceeding in criminal as well as civil cases. The juratores appear to have been in the first instance charged with the preliminary inquiry as to the guilt of any person charged with certain crimes, and upon their finding him guilty he was put to the ordeal or compurgation. This seems to have been the practice in the reign of Henry II. But we learn from Bracton, who wrote in the reign of Henry III., that the practice then was to commit the decision of the case finally to the jury, unless there was a demand of combat by one of the parties, or unless the defendant elected to wage his law.

There was still, however, nothing like the modern proceeding upon a jury trial. The jurors were not expected to decide upon evidence produced by the parties, but upon their own knowledge or information collected by them. The direction of the judge was, that whereas such a man is charged with such a crime, the jury are to make known the truth thereof. Prosecutions for crime were usually upon appeal of a private party. Any one of legal capacity to sue could prosecute for treason, but ordinarily only near kindred by blood were admitted to bring suit for homicide; a woman could prosecute only for the death of her husband, or for a rape committed upon herself, and the appeal in the former case is said by Bracton to have been only *de morte viri inter brachia interfecti*. In other cases the party injured was in general the prosecutor. There was, however, as before mentioned, another mode of charging a person with crime, viz., *per famam patriæ*, a sort of indictment by the *patria* or jury. It does not appear how the prosecution was conducted in such a case; but as there was never any attempt to determine facts according to rules of evidence, it is probable that the first finding or indictment was conclusive, unless the party accused purged himself or took some exception to the jury.—It would exceed our limit to pursue the history of the English criminal law through all its changes. Passing to its present state, we find forms of proceeding eminently adapted to sound judicial investigation. The function of the *patria*, or jury of inquisition, spoken of by Bracton, is now performed by a grand jury, not less than 12 nor more than 23 in number, upon whose indictment most criminal cases are brought before the courts for trial. The exceptions are: 1, cases of homicide where a coroner's inquisition has been returned; 2, actions which, by statute, may be brought by a private prosecutor, or informations by the master of the crown office upon the relation of a private individual; 3, informations filed *ex officio* by the attorney general in cases of atrocious misdemeanor endangering the government. All criminal prosecutions, except the few cases where by statute a common informer is authorized to bring an action, are in the name of the king, and conducted by his law officers. Private suits for crimes, which were formerly allowed under the name of appeals of felony, were long since practically abandoned, and were finally abolished by statute 59 George III., c. 46. So also the wager of battle by the same statute, and wager of law by 2 and 4 William IV., c. 42. The indictment, which is the basis of the arraignment and trial of criminals, was formerly required to be drawn with great technical strictness, and was often quashed for defect of form. Thus it was necessary to set forth the full name of the person charged and a designation of his business and place of residence, also the time and place when and where the offence was committed. Certain technical words were also required, as descriptive of the crime charged, as (when pleadings were in Latin) the words *proditorie et contra ligientiæ suæ debitum*, in treason; *murdravit*, in an indictment for murder; *rapuit*, in rape; and so in other cases. No expressions equivalent in meaning could be substituted; and after the pleadings were, by statute 4 George II., c. 26 (1730), converted into English, the corresponding vernacular terms, as "murdered," "ravished," &c., were retained with the same strictness. And so in felonies it was necessary to charge that the act was done *felonice;* in burglary, *burglariter*. In indictments for murder it was required also to state the dimensions of the wound, and in all indictments the value of the thing which was the subject of the offence, as in larceny, or with which the offence was committed, as in murder. In the former case, it was said to be required in order to distinguish whether it was grand or petty larceny; in the latter case, because the instrument with which a homicide was committed was forfeited as a deodand. This absurd regard to mere form has been, however, abrogated: 1st, by statute 7 George IV., c. 64, which prohibited an arrest of judgment or a reversal on writ of error for any of these formal defects, but which still left the objections to be taken advantage of by demurrer; and finally by 14 and 15 Victoria, c. 100 (1851), commonly called Lord Campbell's act, by which the court is directed to disregard the omission of mere formal words, as "with force and arms," or "against the peace," &c., or any mistake in time or place; and a statement of the manner or means by which the deceased came to his death is dispensed with, and amendments of indictments either in matters of form or substance are allowed upon such terms as the court shall deem reasonable. As to the designation of crimes and their punishments, the English law was until a recent period in a chaotic state. Statutes had been accumulated according to the exigencies occurring at different times, until, by their number, such was the difficulty of determining what was obsolete and what in force, and of reconciling apparently conflicting provisions, that practically the common people had no knowledge of the penal laws to which they were subject, and cases were constantly occurring of the trial and conviction of criminals charged with offences, the nature of which, as defined by law, and the penalties prescribed therefor, they were entirely ignorant of; their ignorance, according to the old maxim, *ignorantia juris non excusat*, being no defence. So also the extreme and disproportioned severity of ancient laws enacted in a turbulent period, or in an unsettled state of society, still prevailed in England at the beginning of the present century. According to Blackstone, there were 160 offences which by various acts of parliament had been declared felonies without benefit of clergy, that is to say, punishable by death. It will be sufficient

to mention the cases of grand larceny, or stealing above the value of 12 pence; embezzlement of a master's goods by a servant; burning stacks of corn, hay, &c., in the night time; killing horses, sheep, and other domestic animals; breaking down dikes or bridges, or breaking away the banks of fish ponds; cutting down trees in an avenue, or growing in an orchard; the malicious tearing or defacing of the garments of a person passing in the street; all of which, and various other acts of no greater degree of criminality, were thus punished. The origin of this severity in the majority of such cases was no doubt owing to the great prevalence of a particular grievance in some locality, and, according to the former mode of reasoning, the frequency of an evil called for increased severity of punishment; but it has happened that when the emergency has ceased the law remained. Common humanity was outraged by the continuance of such a system of criminal law in a civilized community; public attention was at last directed to the necessity of reform, and important modifications were made by several different statutes, beginning with 7 and 8 George IV., c. 27 (1827), and leading to a complete revision in 24 and 25 Victoria (1861), by which capital punishment is abolished in most cases. The criminal law of the United States closely followed that of England, except that some of the barbarous accompaniments of the death penalty were not adopted, and the penalty itself was not inflicted except for the few offences deemed most heinous. (See CAPITAL PUNISHMENT.)—It remains to speak of some principles recognized in criminal law as to the nature of crime in respect to individuals and to the community, the degree of guilt of the person accused, and the rules of evidence by which the offence is proved. I. It is common to divide wrongs into private and public injuries, and it has been erroneously supposed that when the offence is of such magnitude as to become the subject of a public prosecution, the private right is merged. As respects some lesser crimes, as assault and battery, obtaining money by false pretences, libel, and the like, there is a right of private action independent of the proceeding by indictment, and it is not necessary that the individnal injured should procure a criminal conviction at all. In cases of larceny, robbery, and other wrongs affecting property, it is generally assumed that there must first be a conviction of the crime before there can be a civil suit for a recovery of the property taken, or damages in lieu thereof. The only reason assigned for this in the English law is, that the injured party may thereby be more strongly induced to procure a conviction of the offender for the benefit of society. This reason is of no force in this country, where public prosecutors are appointed, and the doctrine which rests upon it is consequently not accepted. In England, as felony worked a forfeiture of the personal estate of the convict, including estates in land for life or a term of years, there was usually nothing to look to as an indemnity for private injury; yet the right of prosecuting for such injury after conviction of the offender is admitted in some old cases; and so after acquital, if there has been no collusion, an action for damages can be maintained (12 East., 409). II. As to the degree of guilt of the persons accused. This involves several inquiries, the first of which is capacity of mind. There must be the *mens doli capax;* for although ignorance is not in general admitted as an excuse for crime, yet this is to be understood of such only as have sufficient understanding to distinguish between right and wrong. The precise limit of capacity cannot be defined. A vicious life undoubtedly produces hardness and insensibility, and there is often to be seen such natural depravity as is wholly inconsistent with the existence of any moral discrimination. Yet the law does not take into account any such perversity of nature, if there is any intellectual power, which is rather vaguely denominated reason. In what degree this power must exist is not susceptible of being defined by any general rule, and is often the subject of perplexing doubt in the application of the rule to particular cases. Children before the age of discretion are exempt by law from responsibility for crime, but the exact period when such discretion shall be pronounced to commence is not fixed. By the Saxon laws the age of 12 was fixed as the earliest possible development of legal understanding; between that and the age of 14 there might be guilt according to the actual capacity. But the rule of the English law now is, that capacity is not to be judged by age in any case, except that under the age of 7 a child cannot be held guilty of felony; but there is a reported case of a child of 8 years of age who was convicted of arson and hanged; so a girl of 13 was convicted and executed for killing her mistress. In all cases capacity is to be judged by actual proof. Idiocy and lunacy excuse from the guilt of crime. If there was a total want of reason at the time the act was committed, whether the deprivation be permanent or temporary, the law acquits from all guilt; but if there be partial reason, as if there is thought and design, or faculty to distinguish the nature of actions, then there will be legal responsibility for every act. Intoxication is not admitted as an excuse for criminal misconduct. In this respect the rule of the common law is different from that of the civil law. By the latter, capital punishment was never inflicted for acts committed in a state of ebriety. The second ground of exemption is where there was no criminal intent, but the act has been committed either by accident, mistake, or necessity. Accident excuses, except where it has happened when a man was engaged in the commission of some unlawful act. A distinction is also made in respect to such unlawful act, as whether it was what is

termed by the law *malum in se*, or only *malum prohibitum*, the criminality being less for any accident occurring in the latter case than in the former. There was much good sense in the rules of the Roman law in respect to culpability for accident. Gross negligence was held as culpable as a wrong intent (*non minus ex dolo quam ex culpa quisque hac lege tenetur*). Thus, if a man was lopping a tree near the road, and it should fall and kill a person passing by, he was held guilty if he had omitted to give proper warning. If a soldier exercising in a place appointed for that purpose should accidentally kill a slave by throwing a javelin, he was without fault; but if it had happened in a place where he had no right to exercise, he was held guilty. Mistake is admissible when it relates to a fact, though, as before mentioned, mistake of law is no excuse; as if a person should kill another that he supposed was breaking into his house, and it should turn out to be a member of his own family, he would be excused on the ground of having mistaken the person. Necessity, as a legal excuse, includes that class of cases which the law designates as duress. In the English law one other case is also included, viz.: the criminal misconduct of the wife by the command or in the presence of her husband. The reason given in this case is, that the wife is supposed to be under the power of her husband; but a better reason may probably be derived from the old law, by which the husband had the benefit of clergy if he could read, but the wife had not, and the rule was introduced from a motive of humanity. The exemption was allowed only in felonies other than treason and murder, but was not admitted as a defence to a charge of any misdemeanor less than felony. Duress is compulsion by the menace of death or other bodily harm, or by actual force. Blackstone limits the expression "bodily harm" to mayhem, or loss of limb; according to which the fear of being beaten would be no duress, so neither would the fear of imprisonment. In this country, on the contrary, a threat of any bodily harm, or even of the destruction of property, would be held to be a duress in that connection. But when it is set up as a justification for the commission of a criminal act, perhaps nothing less than the fear of losing life, or of some permanent bodily injury, would be admitted as a legal excuse. As to the law relating to principals and accessories, there is less discrimination than is called for by our natural sense of justice, as well as by a due regard to public policy. An accessory before the fact, who is one that has procured or advised the commission of the crime which is the subject of prosecution, is properly held liable in equal degree with the principal for the act which has been committed, and all its natural consequences; but not for another and distinct crime which may have been committed by the principal while engaged in the commission of the offence to which he had been instigated. If A procures B to beat C, and in consequence of such beating C should die, A is guilty of murder; but if A hires B to beat a man, and he should set fire to his house, this being a distinct offence, A is not indictable for it as accessory. An accessory after the fact is one who, knowing a felony has been committed, receives, relieves, and assists the felon. The criminality of an accessory after the fact is in England and this country deemed less than that of the principal. The punishment is imprisonment only, even if the offence committed by the principal is punishable by death. III. The rules of evidence and mode of proceeding in criminal trials can be but briefly referred to. The most important principle of the English and American law, and what chiefly distinguishes it from the criminal codes of other countries, is that the person accused is not compelled to testify. In the preliminary examination upon arrest, where the arrest precedes indictment, he is indeed allowed to make his statement, and such statement may be used as evidence against him. But he is usually informed by the magistrate that he is not bound to answer the charge unless he chooses to do so. Another rule, which follows naturally from the preceding, is that it is not necessary to prove the guilt of the accused by more than one witness, except in the case of treason and perjury. In the tribunals of some other countries a different rule prevails, because it is the general practice to put the accused under rigid examination; and if he denies the crime, it is an oath in his own favor, which ought not to be overbalanced by a single oath against him. It was the ancient practice in England not to allow the accused to produce witnesses; and when the courts so far relaxed this strictness as to hear witnesses for the defence, it was still without oath, and the evidence was therefore of less weight. But by statute 1 Anne, c. 9, witnesses are required to be examined on oath for the prisoner as well as against him. The privilege of defence by counsel was until a recent period denied in the English courts in trials for treason and felonies, while by a strange inconsistency it was allowed in trials for misdemeanor. In cases of treason, which was a class of trials in which there had been the greatest outrage of common rights, relief was given by statute 7 and 8 William III., c. 3, which allowed counsel to be assigned to the prisoner upon his request; and in cases of felony, by statute 6 and 7 William IV., c. 114, by which all persons arraigned upon a criminal charge are allowed to make defence by counsel. In the United States, this right was thought of such importance that it was secured by article 6 of the amendments to the federal constitution, and in the several states a similar provision has been made either by the constitution or by law. In France, the practice formerly was to hold the accused to answer in person without the aid of counsel; but it is

now an admitted right that every person charged with a criminal offence is entitled to the aid of counsel for his defence, and it is made obligatory upon the judge to assign counsel when the accused has none. (See *Code des délits et des peines*, art. 187 and 321; *Code d'instruction criminelle*, art. 294, 295.) One of the most important changes recently made in criminal law in the United States is that which in some of the states permits the accused party to appear as a witness before the jury; a change which has led to considerable controversy, but is believed to prove acceptable wherever tried.

CRIMMITSCHAU, or **Crimmitzschau,** a town of Saxony, on both sides of the Pleisse, 35 m. S. of Leipsic, with which it is connected by railway; pop. in 1871, 15,280. It has very extensive manufactories of woollen and cotton goods, to which more recently the manufacture of machinery has been added.

CRINOÏDEA (Gr. *κρίνον*, a lily, and *εἶδος*, shape), animals in shape like a water lily, consisting of an expanded or spreading disk or closed



Crinoïdea.

bud, upon the end of a long, slender, jointed calcareous stem. The name was given by J. S. Miller, author of the "Natural History of the Crinoïdea, or Lily-shaped Animals." They constitute an extinct family of echinoderms of the radiated division of animals, and in the forms of the encrinite and pentacrinite were wonderfully abundant in the limestones of the Silurian period. Their remains now constitute the great portion of the material of strata which extend over large districts, and are several feet thick. Living representatives of the stemmed crinoids are the *pentacrinus caput-medusæ* of the West Indies, and the *rhizocrinus* of the deep sea off the coast of Norway.

CRISPIN AND CRISPINIAN, the tutelary saints of shoemakers, put to death about A. D. 287. The tradition is that they were brothers belonging to a noble Roman family; that, becoming converts to Christianity, they took refuge in Gaul from the persecution under Diocletian; and that they preached the gospel at Soissons by day and exercised the trade of shoemakers by night. They had converted multitudes before their martyrdom under Maximian. Their names are found in the principal early martyrologies, and their festival is observed on Oct. 25. They were the patrons of the religious community of *frères cordonniers*, founded in Paris in 1645, suppressed in 1789, and which has since reappeared and been dissolved.

CRISSA, an ancient town of Phocis, called "the divine" by Homer. It occupied a beautiful situation at the foot of Mount Parnassus, with lofty mountain heights towering above it, and with the beautiful Crissæan plain spread out beneath it. The modern town of Chryso, occupying the same site, contains some few remains of this city. Crissa and Cirrha were long regarded by scholars as but different names for the same place, but Ulrichs, Leake, and Grote have shown that Cirrha was the port town of Crissa. The taxes which Cirrha levied upon pilgrims on their way to Delphi caused the first "sacred war," which resulted in the destruction of the town. The fate of Crissa itself is not known.

CRITIAS, an Athenian pupil of Gorgias the Leontine and of Socrates, killed in 404 B. C. He was a man of uncommon energy of character, possessed high and varied culture, but was destitute of moral principle. He was at once politician, poet, and orator. Some fragments of his elegies are still extant; a work of his on politics is sometimes mentioned, and Cicero tells us that some of his speeches, then extant, would place him as an orator by the side of Pericles. But he is now known in history mainly as the cruel and vindictive leader of the thirty tyrants. In that memorable but brief reign of terror which immediately succeeded the Peloponnesian war, he rioted in slaughter and blood. He was conspicuous among his colleagues for rapacity and violence, and punished with death the suggestion of moderate measures. He was slain in an engagement with Thrasybulus, who shortly after delivered the city.

CRITO, a friend and disciple of Socrates, whom he is said to have supported with his fortune. He made every arrangement for the escape of his master from prison, and used every argument to induce him to save his life by fleeing from his persecutors. His eloquence was however in vain, and Socrates drank the fatal cup (339 B. C.). Crito is a prominent interlocutor in one of Plato's dialogues, which is named after him. He was himself a voluminous philosophical writer, but all his writings have perished.

CRITOLAUS, an Achæan, who incited his countrymen to insurrection against the Romans. He commanded the Achæan army at the battle of Scarphea, 146 B. C., and when overthrown by Metellus, he either committed suicide or perished in the marshes of the coast.

CRITTENDEN. **I.** An E. county of Arkansas, separated from Tennessee by the Mississippi river; former area, 994 sq. m., but a portion has been recently taken to form Cross county; pop. in 1870, 3,831, of whom 2,575 were colored. The surface is level and alluvial, and part of it often overflowed by the Mississippi. Portions of the land are quite swampy, but the rest is generally fertile. The Memphis and Little Rock railroad passes through it. The chief productions in 1870 were 76,340 bushels of Indian corn and 6,841 bales of cotton. There were 593 horses, 556 mules and asses, 894 milch cows, 1,760 other cattle, and 4,278 swine. Capital, Marion. **II.** A W. county of Kentucky, separated from Illinois by the Ohio river, and bounded S. W. by the Cumberland; area estimated at 420 sq. m.; pop. in 1870, 9,381, of whom 809 were colored. It has a level or gently undulating surface, except in the eastern part, where it is hilly. The soil is generally good. Coal, lead, and iron are found in great abundance. The chief productions in 1870 were 43,203 bushels of wheat, 403,948 of Indian corn, 17,487 of oats, 64,405 lbs. of butter, 21,995 of wool, and 1,970,776 of tobacco. There were 2,552 horses, 1,041 mules and asses, 2,027 milch cows, 12,092 sheep, and 16,900 swine. Capital, Marion.

CRITTENDEN, John Jordon, an American statesman, born in Woodford co., Ky., Sept. 10, 1787, died near Frankfort, July 26, 1863. His father, a major in the revolutionary war, was of Welsh descent, and his mother of Huguenot ancestry. Having completed his studies at William and Mary college, Va., in 1807, he entered upon the practice of the law in his native county, but soon removed to Logan county, near the Tennessee border, then an almost unsettled part of the state. In 1816 he was elected to the legislature of Kentucky, and in the following year to the senate of the United States. He resigned the senatorship in 1819, and returned to Kentucky, taking up his residence in Frankfort, where he resided till 1835, engaged in legal practice, and being several times a member of the state legislature. In 1827 he was appointed by President Adams United States district attorney, but in 1829 was removed by President Jackson. He acquired a high reputation as a criminal lawyer, never appearing except as counsel for the defendant. In 1835 he was again elected to the United States senate, served a full term, and was reëlected, but resigned in 1841, in order to become attorney general in the cabinet of President Harrison. He resigned this post upon the accession of Mr. Tyler, and was in 1842 appointed to fill the seat in the senate vacated by the resignation of Henry Clay, and was again elected for six years; but he resigned in 1848, in order to become governor of Kentucky. He favored the nomination of Gen. Taylor as the whig candidate for president, and in 1850 became attorney general in the cabinet of Mr. Fillmore. In this capacity he gave an opinion in favor of the constitutionality of the fugitive slave law. In 1855 he was once more elected to the senate of the United States. In the events of the next few years he bore a prominent part. He had opposed the repeal of the Missouri compromise, and now in all the Kansas troubles he opposed the policy of Presidents Pierce and Buchanan. In 1860 he favored the nomination of Mr. Bell for the presidency. After the election of Mr. Lincoln he took firm ground for the Union, holding that it was right and lawful to resist secession by force. On Dec. 18, 1860, he proposed to congress a series of amendments to the constitution, to be presented for the acceptance of the states. The substance of these was the reënactment of the Missouri compromise, and the prohibition of any interference by congress with slavery, wherever it should be legally established. A few days later he endeavored to have these amendments submitted to the direct vote of the people; this failing, he favored a single amendment to the constitution embodying the substance of those which he had proposed. On March 4, 1861, he took leave of the senate, to which he had been six times elected, and presented the credentials of Mr. Breckinridge, his successor. Returning to Kentucky, he urged the state to stand fast by the Union, and at a special election in June was chosen a member of the lower house of congress. On July 19 he offered a resolution, which was adopted by a vote of 117 to 2, affirming that the war was brought about by the disunionists of the southern states, and that it was carried on by the nation only to defend the supremacy of the constitution, and to preserve the Union, with all the dignity, equality, and rights of the several states unimpaired. He opposed the employment of slaves as soldiers, and denied the power of congress to create the state of West Virginia. His last public speech was delivered Feb. 22, 1863, in opposition to the conscription bill; in this he declared that the object of the war had been changed from its original purpose. Notwithstanding his age and infirm health, he was a candidate for reëlection to congress at the time of his death, which took place suddenly, while away from his home. See "Life of John J. Crittenden, with Selections from his Correspondence and Speeches, edited by his daughter, Mrs. Chapman Coleman" (2 vols., Philadelphia, 1871.)—Of his sons, one, GEORGE B., educated at West Point, became a general in the confederate army; another, THOMAS L., entered the Union army, served with high credit, and was in 1867 made brevet brigadier general.

CRIVELLI, Carlo, an Italian painter, born probably between 1430 and 1440, died after 1493. If not a native of Venice, he studied his art there under Antonio and Bartolommeo Vivarini, whose style is apparent in his earliest works. He afterward borrowed somewhat of realistic force from Mantegna, and formed a style of his own, which, though mannered and

stiff, has often singular power. For many years he pursued his calling in Ascoli, Fermo, and other cities near the Adriatic, and produced many works, specimens of which are to be found in the galleries of Milan, Florence, and Rome. Excellent examples are also contained in private collections in London. His latest work, a "Coronation of the Virgin," in the Oggioni collection in Milan, is considered his best. He invariably painted in tempera, clinging to this method long after other painters had adopted oils, and eventually bringing it to a high degree of perfection. His medium was liquid and pure, and there is no artist of the 15th century whose panels have more successfully resisted the ravages of time.

CROATIA (Croat. *Hervatska Krajina;* Hun. *Horvátország*), a province of the Austro-Hungarian empire, forming with Slavonia a kingdom united with that of Hungary. The kingdom is an irregular triangle cut off from the southwest of Hungary, bounded W. by the Adriatic, N. W. by Carniola and Styria, N. E. by the Drave and the Danube, which separate it from Hungary, and E. and S. by the Military Frontier; area, 8,866 sq. m.; pop. in 1870, 1,160,085. Capital, both of the kingdom and the province, Agram. Croatia is the western part of the kingdom, bounded by the Adriatic, Carniola, Styria, the Drave, Slavonia, and the Military Frontier; area, 5,220 sq. m.; pop. 757,477. The southern portion of the province is mountainous, being intersected by the Julian Alps; north of the Save, which intersects the country, it is hilly rather than mountainous, being traversed by a portion of the Carnic Alps, which divide the waters flowing into the Drave from those which fall into the Save and its tributary the Kulpa. The climate varies in different parts. Along the Adriatic it is similar to that of the opposite coast of Italy, and produces the olive and vine. In the elevated mountain region snow frequently falls in August or September, and lies till April or May. Little grain is raised; the most abundant fruit is the damson plum, from which the favorite beverage of the country is distilled. The grape and the chestnut are also cultivated. The forests are extensive, and hogs, which feed in them, are in some parts the principal domestic animals, the rearing of cattle receiving less attention. The mineral products are of little account. Some gold is found by washing the sands of the Drave; there are iron, copper, lead, coal, and salt. The mountains contain marble, alabaster, and gypsum. Manufactories are few, being almost wholly confined to the portion of country lying upon the Adriatic. There is little commerce. Agram, Karlstadt, and Old Sziszek are the principal marts for trade within the interior. Fiume, on the Adriatic, next to Trieste the most important seaport of the Austrian empire, which lately belonged to Croatia, is now again an integral part of Hungary. (See FIUME.) Croatia is divided into the five counties of Agram, Belovár, Fiume (exclusive of the town), Kreutz, and Warasdin; Slavonia into the counties of Pozsega, Szerém, and Veröcze. The kingdom is represented in the Hungarian diet by 31 delegates (29 to the lower house) elected by the diet of Agram, and by a number of members of the house of magnates, partly hereditary. The governor, who is appointed by the emperor as king of Hungary, bears the title of ban. The Croats, who form the bulk of the population of the province (the remainder being chiefly Germans, Magyars, and Jews), are of the Illyrico-Servian branch of the Slavic race, and their dialect differs little from that of Servia. Nearly nine tenths are Catholics, who have a bishop residing at Agram; most of the others belong to the Greek church, and have a bishop residing at Kreutz. Education is almost wholly neglected. In 1851 there was



Croats.

only one school to every 29 sq. m. and every 3,473 inhabitants. Since then the Austrian government has introduced a system of common school education, but the results are as yet little apparent.—Croatia, which in antiquity formed a part of Pannonia, was subject to the Roman empire from the time of Augustus. It was conquered by the Goths, recovered under Justinian, invaded by the Avars, and in the 7th century settled by Croats, who after long struggles with the Franks finally formed a vassal state of the Byzantine empire. Toward the end of the 10th century the princes of Croatia assumed the royal title. It was conquered by the Hungarians in 1091, by Venice in 1117, and again by the Byzantines in 1168. Having again for a time been under Hungarian sway, and subsequently semi-independent for about a century, it was ultimately annexed to Hungary in 1342, and as its dependency subjected to the Hapsburg dynasty in 1527. Like

Hungary, it suffered terribly from the Turkish invasions. In 1848–'9 the national hatred of the Croats against the Magyars made them one of the principal instruments of the Austrian government in crushing the Hungarian revolution. (See JELLACHICH.) Separated from Hungary in 1849, it was reunited with it in 1867–'8. (See HUNGARY, SLAVONIA, MILITARY FRONTIER, and SERVIAN LANGUAGE AND LITERATURE.)

CROCKER, a N. central county of Iowa, bounded N. by Minnesota, and bordering on Winnebago, Kossuth, and Emmet counties; area, about 500 sq. m. It has been recently formed, and is not included in the census of 1870. The E. fork of the Des Moines intersects the S. W. part. Capital, Greenwood Centre.

CROCKETT, David, an American backwoodsman and member of congress, born at Limestone, on the Nolachucky river, in Tennessee, Aug. 17, 1786, died in Texas, March 6, 1836. His father, of Irish birth, after various other avocations, opened a tavern on the road from Abingdon to Knoxville, where David passed his youth from 7 to 12 years of age. He was sent to a country school, but on the fourth day quarrelled with the schoolmaster, and after playing truant for a time in the woods fled from home to avoid a flogging threatened both by his father and master. For five years he roamed about with drovers and carriers, till in his 18th year he returned home, attended school for two months, learning his letters for the first time, and soon after married and went to live in the wildest portions of the state, distinguishing himself as a hunter. In 1813 he served in the Creek war under Gen. Jackson, and after the peace settled on Shoal creek, in a desolate region of Tennessee. A community of reckless characters having flocked together, it was found necessary to establish a temporary government, and he was appointed one of the magistrates. He soon after became a candidate for the legislature, and made a successful electioneering tour by shooting at matches and telling amusing stories. He was twice reëlected to the legislature, but devoted himself especially to bear hunting, till in 1827 he was elected by the party of Gen. Jackson a representative in congress. At Washington he obtained notoriety by the eccentricity of his manners and language. In 1829 he was again chosen to congress, but soon after changed from a partisan to an opponent of Jackson's administration; and in 1831 it required his most strenuous exertions to secure a reëlection. Finding the influence of Jackson irresistible in Tennessee, Crockett subsequently sought a new career in Texas, then in revolt against Mexico, and after a series of military exploits met his death while defending Fort Alamo, in San Antonio de Bexar. After a hard siege the survivors, six in number, including Crockett, surrendered, but by order of Santa Anna they were put to death. His autobiography was published at Philadelphia in 1834.

CROCODILE, a genus of reptiles which, with the alligator of America and the gavial of the Ganges, constitute the family of crocodilians. Some authors elevate the family into an order, the *emydosauri* of Gray, the *loricata* of Fitzinger, and the *rhizodonta* of Prince Bonaparte, the latter including the large fossil *ichthyosaurus* and *plesiosaurus*. In the class of reptiles they are higher than the saurians, and second to the *testudinata;* among them are included some of the largest, most powerful, and best protected of their class. The crocodilians, including the alligator and gavials, are characterized as follows: the skin is tough and thick, and protected by firm scales, of different shapes and sizes, forming a coat of mail sword- and bullet-proof; different species have been distinguished according to their arrangement on the neck; they are square on the upper and under surfaces of the body and on the tail, large and ridged longitudinally on the back, small and rounded on the sides of the body and neck and limbs; on the head the skin is applied directly on the bone, following its eminences and depressions, and unprotected by scales, in this differing from the true saurians; the scales are thinnest below, and of a lighter color, almost white, the upper tints being greenish with dark spots, or an obscure brown. Under the jaw, in the longitudinal folds of the skin, open the ducts of odoriferous glands, which secrete a viscid matter having a strong and disagreeable musky odor; similar pores open near the cloaca. For the details of the skeleton the reader is referred to Cuvier, Meckel, Oken, and other writers on comparative anatomy. The vertebræ are concave anteriorly and convex posteriorly, and are 7 or 8 in the neck, 12 in the back, 5 in the loins, 2 in the sacral region, and from 34 to 42 in the tail; the number is the same in individuals of a species at all periods of life. The vertebræ of the neck have long articulated transverse processes, or cervical ribs, which prevent any extensive lateral motion of the neck; on the under surface of the caudal vertebræ is a series of V-shaped bones, the hæmal arches, for the protection of the vessels. The ordinary ribs are 12 to 13 on each side. The sternum is prolonged even to the pelvis, and gives attachment to 6 or 7 pairs of cartilages, not extending to the spine; these serve to strengthen and protect the abdominal walls, and are represented in man by the transverse lines of the rectus abdominis muscle; the sternum is also prolonged as a point in advance of the ribs; there are no true clavicles, and the bones of the pelvis remain separate. The lower jaw is longer than the cranium, because the condyles of the temporal bones, corresponding to ossa quadrata, are placed considerably behind the articulation of the head with the spine, and are united to the skull as in the turtles; the gape of the mouth is really longer than the extent of the head, from this backward situation of the glenoid cavity. The muscles which move the jaws

arise so far back, that they act in part upon the whole head, explaining the assertion made from the time of Aristotle to that of Cuvier, and at various times believed and disputed, that the crocodile has the ability to move both jaws; when the lower jaw is fixed upon the ground, the action of the muscles may raise the whole head, and with it the upper jaw, otherwise immovable. The jaws have no lateral motion, and none from before backward, the articulation being a simple hinge joint. There are no cutaneous lips, the teeth being visible even when the jaws are closed. The teeth are numerous, conical, isolated, unequal in size, hollowed at the base, arranged in a single row, implanted by a true gomphosis in the substance of the maxillary borders, in special alveoli directed from before backward, and provided with a kind of gum; the new teeth push up into the hollow of the old, and cause their absorption; the new teeth are larger, but the same in number at all ages. The tongue is flat, wide, fleshy, and attached all around to the jaw bone; it is not divided at the tip, and cannot be extended, being apparent only when the jaws are separated, and forming the floor of the mouth; it cannot be used to seize or retain their prey, nor for respiratory purposes; it is for the most part smooth, except at the base, where irregularly contorted folds are prominent. The nostrils open at the end of the muzzle, near together, and may be closed by valves; their cavity forms two canals, extending along the cranium, and opening, not into the mouth, as in other reptiles and birds, but into the posterior fauces behind the soft palate, as in mammals; the hyoid bone sends upward a rounded cartilaginous continuation, which can be made prominent at the will of the animal; the soft palate hangs down to meet this, by which the cavity of the mouth can be completely shut off from the fauces; by this arrangement, when the animal is under water, with only the tip of the nose in the air, and even with the mouth filled with water, respiration can be perfectly carried on; and by the same mechanism the act of swallowing can be accomplished beneath the surface. Unlike the saurians, this family have the external opening of the ears protected by two folds of the skin, resembling lids, by which the meatus can be closed; the opening is just behind the eyes. The eyes are very small, and provided with three lids, an upper and lower, with a third or nictitating membrane moving transversely, transparent, and evidently designed to protect the cornea and permit vision under water; the pupil is a vertical slit, and the crystalline lens almost spherical. The anterior limbs have five toes, the external two without nails; the posterior limbs are four-toed, more or less webbed, the external one without a nail; the limbs are so short that they barely raise the body from the ground, and are almost at right angles to the spine; their gait is, therefore, slow and awkward. The tail is longer than the trunk, flattened on the sides, surmounted with crests continued from the back, and serrated below; the powerful muscles of the dorsal region are carried to their greatest development in the sides of the tail, which is the principal organ of locomotion in the water. The stomach is muscular, but in no way resembling the gizzard of a bird; in this cavity are frequently found stones and pieces of wood, which were once supposed to be swallowed intentionally to assist in triturating the food, or for the purpose of distending the stomach during the season of hibernation which some of them undergo; it is altogether probable that such foreign bodies have been accidentally swallowed during the repasts of the voracious animal. The lungs consist of three principal cavities, communicating freely with each other; the walls are divided into innumerable cells, the fleshy compartments of which form a very intricate network, resembling the columnæ carneæ of the heart; when fully expanded, they will contain a large quantity of air. The most interesting organ is the heart, as it shows an approach to, and as it were the connecting link with the birds. In reptiles generally the heart consists of three cavities, a ventricle and two auricles; the ventricle receiving both arterial and venous blood, and sending this mixed fluid over the system at the same time that it sends to the lungs blood of which a portion has just been received purified from them. In the crocodilians the ventricle has a complete division into right and left, and the circulation is so arranged that while the head and anterior half of the body receive pure arterial blood when the animal is in the air, the posterior half receives a mixed arterial and venous blood; the mingling of the two bloods taking place, not in the heart itself, but by an opening between the two aortas, a fact unknown to naturalists till the time of Meckel and Panizza. The ordinary course of the circulation would be through the venæ cavæ to the right auricle, thence to the right ventricle; from this more than half of the venous blood goes to the lungs by the pulmonary artery, the rest being distributed to the lower extremities through the left or venous aorta; from the lungs the pure blood comes to the left auricle, thence it passes to the left ventricle, and then by the right or arterial aorta to the head and anterior extremities and body generally, after mixture with the venous blood. In the common circulation, or when the animal is in the air, there would probably be but a trifling, if any, mixture of the bloods through the opening in the aortic wall, and during the contraction of the ventricles the pressure of the valves of the aortæ against the opening would prevent the mingling; but during the diastole of the ventricles, when the valves close to prevent regurgitation into the heart, the aortic opening would be free, and the bloods could mix in whichever direction the pressure was the strongest; the opening, however, performs its special function after

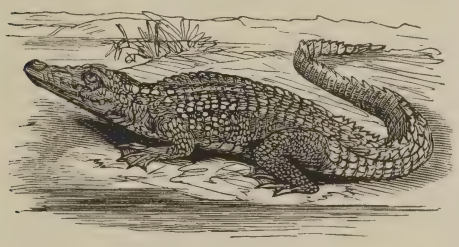
the animal has been under water a long time, when there is no respiration nor pulmonary circulation, no blood in the left ventricle, and none sent through the true aorta; were it not for this opening, the head and anterior limbs, which are supplied by the right aorta, would be unprovided with blood; it has been naturally concluded that venous blood is sent through the opening from the left aorta to supply these parts. By its four cavities the heart of the crocodilians resembles that of the birds, and also, by the mixture of the blood in the vessels, that of the fœtal mammalia. Meyer compares the left aorta to the ductus arteriosus, and he believes this structure to be a temporary condition, disappearing as the animal advances in age. In the dissection alluded to above, the specimen was seven feet long, and old enough to be impregnated; the edges were firm and well defined, like those of a persistent foramen; and physiological reasons have been given why it should be permanent in this family, when the respiration ceases during submersion and hibernation. In the males the genital organs are simple; as in turtles and birds, the cloaca is longitudinal. The female alone prepares the hole in the sand in which the eggs, sometimes 60 in number, are placed probably during the night; she covers them with sand and leaves to hide them from the ichneumon and certain reptiles which feed upon them; the eggs are hatched in from three to six weeks, according to season and latitude. The amphibious habits of the crocodilians are indicated by the nostrils, separation of the posterior fauces from the mouth, shape of the limbs and tail, and structure of the lungs and heart. The crocodiles proper are distinguished from the alligators by their head being longer in proportion to the breadth, by the smaller number of teeth (30 below and 38 above, according to Cuvier), by the fourth lower tooth on each side being received into a groove in the upper jaw instead of a pit when the mouth is closed, by the dentated crest on the external border of the hind legs in most of the species, by the complete webs of the hind toes (at least the external), and by the larger cranial openings perceptible through the skin behind the eyes. Nothing is more characteristic than the narrowing of the muzzle behind the nostrils caused by the groove just alluded to, added to the perforation of the upper jaw by the first lower teeth; the plates of the nape occupy the middle portion only, a space before and behind being without them; as age advances the head becomes very rough. The species are difficult to distinguish from each other, and the variations within the limits of species are considerable.—Europe has no crocodile, nor crocodilian, in its present fauna; America has two, Asia two, and Africa one; other species are described, of unknown habitat, and of uncertain characters. The following species will sufficiently characterize the genus: I. The common crocodile of the Nile (*crocodilus vulgaris*, Cuv.), one of the sacred animals of the Egyptians, is mentioned by Herodotus, and well described by Aristotle in his "History of Animals;" the latter also mentions the spur-winged plover (*vanellus*), which



Egyptian Crocodile (Crocodilus vulgaris).

enters the mouth of the crocodile to pick out and eat the insects attached to the mucous membrane. This species has the widest jaws, 6 cervical plates, the dorsal plates quadrangular with 6 longitudinal series of moderate ridges; cranium rather flat; teeth 66, 36 above and 30 below, the longest being the 3d and 9th of the upper jaw, and the 1st, 4th, and 11th of the lower; 16 to 18 transverse rows of bony plates from the shoulders to the tail, and on the latter from 26 to 38 circles of scales surmounted by a thin, flexible, serrated crest, double for about half its length. The color of the upper surface is olive-green, spotted with black on the head and neck, and marbled with the same on the back and tail; two or three wide, oblique black bands on each flank; beneath greenish yellow; claws brown. It grows to the length of 20 to 25 ft., and possibly longer. A variety of this (*C. palustris*, Less.), found in Asia, has the head rougher, the scales of the sides, flanks, and upper part of the neck convex and ridged, and the color above olive-yellow, marbled with blackish brown. A third variety (*C. marginatus*, Geoff.), a native of southern Africa, has the jaws narrower and elongated, the cranium slightly concave, six narrow nuchal plates, the upper parts deep bottle-green, with small brown waving lines disposed in a radiating manner. This variety grows to a large size, and is doubtless the one so often seen by Livingstone and Cumming in their journeyings in South Africa. Livingstone says that 60 eggs have been taken from a single nest; they are about the size of a goose egg, of the same diameter at both ends, white, and partially elastic from having but little lime in their composition and a firm internal membrane. The nests are within a few feet of the water, and are used for successive years if undisturbed; the female assists the young out of the nest, and leads them to the edge of the water, where she leaves them to catch fish for themselves. Fish is the principal food at all ages; a wounded animal, or even a man, going into a lake infested by them, is almost sure to be seized; they seldom leave the water to

catch prey, but often come out to bask in the sun; they fish chiefly by night, and when eating make a loud champing noise. The natives are very fond of the eggs, eating only the yolk. The Egyptians kept crocodiles in their temples, where they were fed by the priests and ornamented with gold and precious stones; these were highly venerated by the people, and after death they were carefully embalmed and buried with great ceremony; it is very common to find mummies of crocodiles in their tombs, and many may be seen in our museums. The ichneumon, a carnivorous mammal allied to the civets, renders important service to man by destroying the eggs of the Nilotic crocodile. The common crocodile is not confined to Africa, but occurs in Asia, especially on the Malayan peninsula; it is often met with three or four miles at sea, and has been known to attack boats returning from fishing, and occasionally with the loss of human life. II. The most common Asiatic species is the double-crested crocodile (*C. biporcatus*, Cuv.), so named from the two rough lines on the upper jaw extending forward from the anterior angle of each eye. The lateral



Double-crested Crocodile (Crocodilus biporcatus).

borders are irregularly convex, and deeply grooved for the lower teeth; the upper surface is very rough, especially in large individuals; the teeth are generally 66, 36 above and 30 below, the largest being the 2d, 3d, 8th, and 9th above, and the 1st and 4th below; the hind legs are as long as the trunk, the fore legs are a third shorter; the armature of the neck consists of 6 shields, 4 in a square, and 1 on each side of these, of an oval shape and strongly crested; on the back are 16 or 17 transverse rows of ridged plates, of an ovoid form; the tail has 38 or 40 scaly rings, double-crested for half its length. The color is yellowish green, with black oval spots above. It grows to a length of at least 20 ft. In Gironière's "Twenty Years in the Philippines" is an account of the capture of an immense individual of this species, measuring 27 ft. in length and 11 ft. in circumference under the armpits; the skull of this specimen is now in the cabinet of the Boston society of natural history, and measures nearly 4 ft. from the nose to the end of the lower jaw; the head and soft parts attached weighed over 400 lbs. It is found in most of the rivers and lakes of eastern Asia and the Indian archipelago. III. The lozenged crocodile (*C. rhombifer*, Cuv.) of the West Indies has the forehead surmounted by two ridges diverging backward, the upper jaw much arched transversely, the jaws narrow, the body thick, the toes and swimming membranes short, the scales of the flanks, sides, and upper part of the neck tuberculated, and the limbs without serrated crests; the sides of the upper jaw are very prominent between the 6th and 11th teeth; the teeth are 64, 34 above and 30 below, the largest being the 2d and 7th in the upper jaw, and the 4th and 10th in the lower; on the nape are 4 small shields in one row, and on the neck 6 oval ridged plates, 4 in a row and 2 behind these; dorsal scales square, in 18 transverse rows. The general color is dark brown above with zigzag lines of deep yellow, and spots of the same on the flanks and limbs; yellow and chestnut below. It attains a considerable size. IV. The long-nosed crocodile (*C. acutus*, Geoff.) is found in the West Indies, particularly in Hayti, and in the northern parts of South America; it has also been found on the coast of Florida. It is characterized by its lengthened muzzle, convex forehead, and the irregular disposition of the outer dorsal scales; the hind feet are strongly webbed; on the nape are 2 or 4 shields, and on the neck 6, as in the Nilotic species; the teeth 66, 36 above and 30 below, the longest being the 4th and 10th in the upper jaw, and the 4th in the lower. The color is brown and yellow above and yellow below. It is said to grow to a length of 20 ft. The *C. cataphractus* (Cuv.) and *C. Journei* (Bory de St. Vincent) form the connecting links between the crocodile and the gavial.—Crocodilians existed in great variety in former geological epochs, and in countries further north than the present habitats of these reptiles. The most remarkable difference between the fossil and existing species is in the form of the vertebræ; the existing crocodilians have these bodies concave in front and convex behind, and the same is true of the species of the tertiary epoch; but the fossils of the older strata have the vertebral bodies flat, or biconcave, as in fishes, or else the anterior face convex and the posterior concave, just the opposite to the existing forms. Those of the tertiary epoch are generally found in fresh-water deposits, and near the mouths of supposed rivers, so that their habits were then probably the same as now; they have been found as far north as England and France, in Asia, and in the greensand of New Jersey. During the secondary period there existed crocodilians with flat or biconcave vertebræ, resembling gavials in their lengthened cranium; from their stronger armature, more numerous ribs, and the strata in which they have been found, they were probably marine. Among the genera are *teleosaurus* (Geoff.), *mystriosaurus* (Kaup), *macrospondylus* (H. von Meyer), *gnathosaurus* (H. von Meyer), &c., found in the liassic, oölitic, and calcareous

strata. Those with an anterior convexity and posterior concavity, of which the type is *steneosaurus* (Geoff.), resembled the gavials, and have been found in the lias and oölite of England.

CROCUS, a genus of plants of the order *iridaceæ*. There are two sorts of crocuses, those which blossom in spring, such as *crocus vernus*, with purple or white flowers, and finely netted root coats, and *C. Susianus*, or cloth-of-gold crocus, with small, deep yellow flowers, the sepals of which are curiously veined with dark, chocolate-brown lines; and those which blossom in the autumn, such as the saffron crocus (*C. sativus*), an oriental plant, cultivated for its long, orange-colored, drooping styles, and



Garden Crocus.

the Sicilian crocus (*C. odorus*), whose flowers are fragrant. The saffron crocus blossoms in October, but it is not commonly seen in our gardens. It is, however, extensively cultivated for its produce of saffron in some parts of England. Good saffron consists of the stigmas only, which are small, narrow, and extremely light interior parts of the flower. The crocuses are mostly hardy little plants, and once introduced into the flower borders, they will continue and increase without care.

CRŒSUS, king of Lydia, succeeded to the throne before the middle of the 6th century B. C. Writers of high repute, however, conjecture that he had already been for 15 years associated in the government with his father Alyattes, and that many of the events recorded by Herodotus as belonging to his reign are to be referred to this period of joint government. This view is rejected by Rawlinson, according to whom his reign extended from 568 to 554. He ascended the throne in a time of peace and prosperity; he was the heir to untold treasures; success crowned all his early efforts; he subdued the Greek cities on the coast of Asia Minor, formed an alliance with the Grecian islands, and extended his conquests toward the east to the river Halys. He was now a mighty monarch, ruling over 13 nations, and in alliance with the powerful rulers of Media, Babylon, and Egypt; the vast wealth which he had inherited had been increased by the tribute of conquered countries, by the confiscation of great estates, and by the golden sands of the Pactolus. We may perhaps form some idea of the extent of this wealth from the votive offerings which he deposited in the temples. Herodotus saw the ingots of solid gold, six palms long, three broad, and one deep, which to the number of 117 were laid up in the treasury at Delphi. He also beheld in various parts of Greece other rich offerings, all in gold, which had been deposited in the temples by the same opulent monarch; among them a figure of a lion, probably of the natural size; a wine bowl of about the same weight as the lion; a lustral vase; and a statue of a female, said to be Crœsus's baking woman, three cubits high. But in the midst of all his wealth and prosperity, Crœsus began to be alarmed at the rapid conquests of Cyrus; and when at length he saw the Median power fall before the Persian arms, he resolved to avenge his brother-in-law Astyages, the dethroned king of Media. He accordingly crossed the Halys, and offered battle to the Persians, but after an indecisive engagement returned to Sardis. Cyrus pursued him, took the city, and made him his prisoner. Crœsus was condemned to be burned alive, but was finally spared, and became the confidential adviser of his conqueror, and afterward of his son Cambyses. Rawlinson regards the narrative of the life of Crœsus as largely mythical.

CROFT, William, an English composer, born in Warwickshire in 1677, died in 1727. At the age of 31 he obtained the position of composer to the chapel royal and organist to Westminster abbey, which he held until his death. As a composer of cathedral music he held a high rank. The degree of doctor of music was conferred on him by the university of Oxford in 1715. In 1724 he published, under the title of *Musica Sacra*, an edition of his select anthems, 2 vols. folio, arranged for two, three, four, five, six, seven, and eight voices. Some of these are still performed in the English church service. Dr. Croft was buried in Westminster abbey.

CROGHAN, George, an American soldier, born near Louisville, Ky., Nov. 15, 1791, died in New Orleans, Jan. 8, 1849. He graduated at William and Mary college, Va., served in 1811 at the battle of Tippecanoe, was made captain in the following year, and major March 30, 1813. On May 5, 1813, he distinguished himself as aide-de-camp of Gen. Harrison in the defence of Fort Meigs; and on Aug. 1 and 2 he successfully defended Fort Stephenson, at Lower Sandusky (now Fremont), Ohio, with a garrison of 160 men, against the attack of Gen. Proctor, with a force of over 1,000, half regulars and half Indians; and this, notwithstanding the fort was so weakly constructed and poorly provided, that he had actually been

ordered to abandon it. For this exploit he was rewarded with the brevet of lieutenant colonel, and 22 years afterward (Feb. 13, 1835) with a gold medal from congress. He was made inspector general, with the rank of colonel, Dec. 21, 1825, and in that capacity served with Gen. Taylor in Mexico in 1846–'7.

CROKER, John Wilson, a British statesman and author, born in Galway, Ireland, Dec. 20, 1780, died at Hampton, near London, Aug. 10, 1857. He was educated at Trinity college, Dublin, where in 1800 he received the degree of bachelor of arts, and was entered as a student at Lincoln's Inn, but remained in Dublin, and was called to the Irish bar in 1802. He devoted his leisure to literature, and published anonymously in 1804 "Familiar Epistles on the Irish Stage," and in 1805 "An Intercepted Letter from Canton." In 1807 he wrote an elaborate pamphlet on "The Past and Present State of Ireland," in which he advocated Catholic emancipation. In that year he was returned to parliament by the borough of Downpatrick. When, in 1809, charges of maladministration were brought against the duke of York, and a parliamentary inquiry was instituted, Mr. Croker was one of the most effective defenders of the duke. He was associated with Gifford, Scott, George Ellis, Frere, and Southey in establishing the "Quarterly Review," the first number of which appeared in 1809, and he continued till his death to be one of the most frequent contributors to that periodical. In 1809 he was appointed secretary to the admiralty, and retained that office till 1830. He sat in the house of commons through eight successive parliaments till 1832, having been returned for Yarmouth, Athlone, Bodmin, and in 1827 for the university of Dublin. In 1828 he was sworn a privy councillor. He favored the project of Catholic emancipation, and was among the first to advocate a state encouragement of the fine arts. He was a resolute opponent of the reform bill, which he believed would ultimately revolutionize the country. The passing of that bill destroyed him politically, for he declared that he never would sit in a reformed parliament. He subsequently devoted himself to literature, and his contributions to the "Quarterly" were so caustic that for many years it was customary to attribute all the most malevolent and ablest articles of that periodical to his pen. Besides his review articles and many pamphlets and printed speeches on political questions, he published poems entitled "Talavera," "Songs of Trafalgar," and several lyrics, of which the fine lines on the death of Canning are among the most successful; "Military Events of the French Revolution of 1830;" "Letters on the Naval War with America;" and "Stories from the History of England for Children," which Scott acknowledged to have been the model of his "Tales of a Grandfather." He also translated Bassompierre's "Embassy to England," edited the "Suffolk Papers," the "Letters of Lady Hervey," Lord Hervey's "Memoirs of the Reign of George II.," and Walpole's "Letters to Lord Hertford," and furnished an edition of Boswell's "Life of Johnson" with copious annotations. The last named work was severely reviewed by Macaulay; and in return, the harshest and most effective criticism upon the first volumes of Macaulay's "History of England" was from the pen of Croker. He was also long at feud with Disraeli, who lampooned him in the character of Rigby in "Coningsby," and whose political pretensions were consequently assailed in the "Quarterly." He had a controversy with Lord John Russell upon the publication by the latter of the "Memoirs and Correspondence" of Moore. A selection from his numerous contributions to the "Quarterly Review" has been published.

CROKER, Thomas Crofton, an Irish author, born in Cork, Jan. 15, 1798, died in London, Aug. 8, 1854. When 15 years of age he was apprenticed to a merchant, and began to make occasional rambles on foot through the south of Ireland. During these excursions, continued for many years, he made the researches among the peasantry and the collections of legends and songs which furnished the materials for his "Researches in the South of Ireland" (1824), and for his "Fairy Legends and Traditions of the South of Ireland" (1825). From 1819 to 1850 he was a clerk in the admiralty, retiring with a pension. In 1829 he published the "Legends of the Lakes," and rhymes of a pantomime founded on the story of "Daniel O'Rourke," which were followed in 1832 by the tales of "Barney Mahoney" and "My Village." In 1838 he published the "Memoirs of Joseph Holt, General of the Irish Rebels in 1798," and in 1839 he edited the "Popular Songs of Ireland," with historical and personal annotations.

CROLY, George, a British clergyman and author, born in Dublin in August, 1780, died in London, Nov. 24, 1860. He was educated at Trinity college, Dublin, and, having become noted as an eloquent preacher and a versatile writer, was presented in 1835 with the rectorship of St. Stephen's, Walbrook, London. His literary career began with a poem entitled "Paris in 1815," in which he describes the works of art collected by Napoleon in the Louvre, prior to their restoration to the various galleries of Europe after the surrender of Paris. This was followed in 1820 by the "Angel of the World, an Arabian Tale," and by several satires and lyrics, first collected in 1830. In 1824 his comedy of "Pride shall have a Fall" was performed at Covent Garden theatre with great success. He published in 1827 "Salathiel, a Story of the Past, the Present, and the Future," founded on the legend of the wandering Jew. It was followed by two other works of fiction, "Tales of the Great St. Bernard" and "Marston" (1846). He edited the works of Pope (1835), and the select works

of Jeremy Taylor (1838). To the department of historical and biographical literature he contributed the "Personal History of George IV." (1830), "Political Life of Burke" (1840), and "Historical Sketches, Speeches, and Characters" (1842). On topics more strictly professional, he published "The Apocalypse of St. John, a new Interpretation" (1827), "Divine Providence, or the three Cycles of Revelation" (1834), "The True Idea of Baptism" (1850), "Scenes from Scripture" (1851), and several volumes of sermons, besides essays on questions of public interest, such as dissertations on the "Tracts for the Times," "The Popish Supremacy," "Papal Aggression," "Marriage with a deceased Wife's Sister," and "The proposed Admission of Jews to Parliament." He was also a frequent contributor to various periodicals.

CROMLECH, or **Cromleh,** a primitive kind of sepulchral monument among the ancient Scandinavian and Celtic nations. It consisted of a large flat stone laid on other stones set upright to sustain it. These monuments are supposed



Kit's Coty House.

by some antiquaries to have been also used as altars on which sacrifices were offered. One of the best known cromlechs is that called Kit's Coty House, situated on a hill about ½ m. N. E. of the village of Aylesbury, in the county of Kent, England. It is composed of three upright stones (two about 8 ft. square and 2 ft. thick, and the third somewhat smaller), which support an irregular roof stone about 11 ft. long, 8 ft. broad, and 2 ft. thick. The stones are of the kind called Kentish rag, and are rough and irregular in shape. Though the cromlech, dolmen, and kistvaen are frequently confounded, they are different, the first being open at the sides and ends, and larger, whereas the dolmen and kistvaen are closed up on every side. The word cromlech is probably derived from the Armoric *crom*, crooked or bending, and *lech*, or *leh*, a stone. By the inhabitants of Wales and Cornwall cromlechs are called *coetne Arthor*, or Arthur's quoits.

CROMWELL. I. Oliver, lord protector of the English commonwealth, born at Huntingdon, April 25, 1599, died at the palace of Whitehall, Sept. 3, 1658. His family belonged to the class of English gentry, and his social position was well described by himself, when he said, "I was by birth a gentleman, neither living in any considerable height, nor yet in obscurity." The Cromwells were connected with the St. Johns, the Hampdens, and other eminent English historical families. The great-grandfather of Oliver was Sir Richard Williams, a nephew of Thomas Cromwell, earl of Essex, whose name he took. His grandfather was Sir Henry Cromwell, who had been knighted by Queen Elizabeth, and who was famous for his charities. Robert Cromwell, a younger son of Sir Henry, married a daughter of William Steward of Ely, who was descended from the youngest son of Alexander, lord steward of Scotland, founder of the house of Stuart. This lady and Charles I. were eighth cousins, and her son Oliver was three generations nearer to Alexander than was the king whom he supplanted. The income of Oliver's parents was £360 a year, a large sum for those days. Robert Cromwell was a justice of the peace, and sat in one of Elizabeth's parliaments. Many anecdotes are related of the youth of the future protector, most of which were probably coined after he had risen to distinction. A monkey snatched him from his cradle, and took him to the housetop. A curate saved him from drowning, and lived to tell him that he repented the deed when he was warring against the church. He had a fight when five years old with Prince Charles, afterward Charles I., and flogged him, when the royal family was on a visit to his uncle at Hinchinbrook. A gigantic female figure drew his bed curtains, and told him that he should become the greatest man in England, but did not mention the word king. What seems certain is, that he was a froward boy, much given to robbing orchards and to practical jokes. He took to learning by fits and starts, and, much to the surprise of his master, who flogged him severely and often, made but little progress. In 1616 he was sent to Sidney Sussex college, Cambridge, where he is represented as having lived a wild life; but as in after days he showed a fair knowledge of Latin, it is to be supposed that his studies were not neglected. In 1617, after his father's death, he left Cambridge, and was, according to some of his biographers, entered of Lincoln's Inn. The accounts of his London life are contradictory. One represents him associating with the best company, while the other paints him as a coarse profligate. His youth was probably spent like that of most men of his class, being that neither of a devotee nor a debauchee. In 1620 he married Elizabeth, the daughter of Sir James Bourchier, and soon afterward his mind took that serious turn which had so great an effect on his life. He is said to have given the best proof of his sincerity by making restitution to persons of whom he had won money. He prayed, preached, and exhorted with unction, and assisted those of his brother Puritans who needed aid in his neighborhood. He was

a member of the parliament which met in 1628, sitting for Huntingdon. During the 11 years that followed the dissolution of that parliament, and while Charles I. was endeavoring to establish a despotism over England, Cromwell lived either at Huntingdon, at St. Ives, or at Ely (where in 1636 he inherited an estate from his uncle Sir Thomas Steward, worth £500 a year), his devotional feeling increasing in depth and strength, while his attachment to the country party was deepened and confirmed. There used to be current a story, now abandoned, that in 1638, despairing of his country's welfare, Cromwell embarked for New England, in company with Pym, Hazelrig, and Hampden, but was prevented from sailing by a royal order in council. The opposition which he made, not to the draining of the fens, but to the interference of government in the work, was successful, and won him great fame, and from the people the title of "lord of the fens," while it showed the country that he was a man of immovable resolution. In 1640 he was chosen to the short parliament; and when the second parliament of that year was called, Cromwell contested Cambridge with the poet Cleaveland, a zealous royalist, and is said to have defeated him by one vote. Cleaveland is reported to have said that that single vote had ruined both church and kingdom; but this was probably an invention of later times, as in 1640 Cromwell was not so high in general estimation as to be reckoned among the great leaders of his party, nor was it supposed that that party aimed at anything which implied hostility to the established order of things in church and state. From the time that he entered the long parliament Cromwell went with the root-and-branch men, but he was not so conspicuous as to be noted until after the commencement of the civil war. Yet he served on many committees, and took part in debate. Sir Philip Warwick, who heard him speak in the first days of the session, felt his respect for the commons lessened because they hearkened much unto him. So little was he known to some noted men, that on the day he made the speech here mentioned Lord Digby asked Hampden who the sloven was; and received for answer that, if ever there should come a breach with the king, that sloven would be the greatest man in England. Cromwell was not much given to talk, but he was an active party man, and labored with zeal in the common cause. It has been ascertained, says Mr. Sandford, "that within the first ten months of the long parliament, and before the recess, which began on Sept. 9, 1641, Cromwell was specially appointed to 18 committees, exclusive of various appointments among the knights and burgesses generally of the eastern counties. The most important matters fell within the province of several of these committees." He supported the grand remonstrance and all the other measures of the parliament that were meant to bridle the faithless king. When the war commenced he became the most active of all men in the field, which he was the first to enter. Before the royal standard was set up he went down into Cambridgeshire, where he had previously sent arms, and formed the nucleus of his "Ironsides," at the same time seeking to give the forcible resistance that was to be made to the king a systematic character among the leading men of the district, to the end of rendering their military means solidly available. He contributed liberally of his money to the cause. He seized the plate of Cambridge university, which was to have been sent to Charles I., and took the magazine that was in the town. His uncle, Sir Oliver, was a royalist, and the nephew, though he treated him personally with consideration, took from him everything with which he could assist the king. He was present at the battle of Edgehill, was made a colonel in January, 1643, acted under the earl of Essex, the parliamentary lord general, and showed himself to be a cavalry officer of remarkable capacity and resource. From the first he saw that the parliament could not contend against the king's forces unless it should have in its service men capable of meeting the loyalists on some ground of principle; and against the chivalrous honor that actuated the better portion of the latter, he purposed to direct the religious spirit of the Puritans. Hampden, to whom he unfolded his scheme, thought it "a good notion, but impracticable;" but Cromwell found it no such difficult matter. He raised a cavalry regiment, 1,000 strong, which he drilled and exhorted until it became the finest body of troops in the world, and was the seed of that army which won the cause of the parliament, and then overthrew the parliament itself. This regiment was composed mostly of freeholders or the sons of freeholders, and was recruited from among Cromwell's neighbors. Both friends and enemies bear the fullest evidence to the discipline, valor, skill in arms, freedom from military vices, and religious zeal of these Cromwellian soldiers. Their commander told them that they were to fight the king, and said he would himself as soon shoot that personage as any other whom he should encounter in the hostile ranks. This was contrary to the idea and practice of the parliament, which fought the king in his own name, a fiction which had no hold on the Ironsides, who cheered their colonel's words, and ever acted in their spirit. The early military services of Cromwell were useful, and were soon followed by others of a brilliant character. He surprised a party of loyalists in Suffolk, kept the same party quiet in the eastern counties, and near Grantham totally routed a body of cavalry that was seeking to obtain control of Lincolnshire. His next action was the relief of Gainsborough, July 27, 1643. The royalists were advancing in force upon the town, when Cromwell threw himself in their front. Though the enemy was triple his own numbers, and was drawn up on the

summit of a hill, the base of which could be reached only through a gateway in a fence that was commanded by that enemy's fire, he led on his men, charged up hill, and carried the position. Some of the enemy fled, but Cromwell, then exhibiting for the first time that mode of action which gave him so many victories, did not pursue them, but re-formed his troops, and fell upon those who stood, routing them, and driving them into a bog, where they were all butchered, including their general. This victory raised Cromwell's reputation, and the more so that most of the parliamentary generals showed little conduct, and were often beaten. He continued his services in Lincolnshire and the neighboring counties; and parliament ordered that 2,000 men should be added to his command, to be disciplined after his fashion. He was joined with the earl of Manchester in command of six associated counties, and their forces were united at Boston in October, 1643. Fairfax had previously joined Cromwell. On Oct. 11 Sir John Henderson, at the head of a superior body of royalist cavalry, came up with Cromwell and Fairfax on Winceby field. An action followed, in which Henderson was beaten, though his force was three times as numerous as that of the parliament. Cromwell had a horse killed under him, and while rising was himself struck down; but soon recovering, he joined in the battle. After this success, and until the weather forbade further operations, Cromwell continued to act in the field. Parliament made him lieutenant governor of the isle of Ely, and he was engaged during the winter in raising funds from Peterborough and Ely cathedrals, and from the university of Cambridge, and in reforming the university, 65 fellows being ejected. On Feb. 16, 1644, he was appointed one of the committee of both kingdoms, which was then constituted the executive authority for the conduct of the war, and affairs generally. The campaign of 1644 placed Cromwell clearly before the country. The earl of Manchester and Cromwell joined the army of Fairfax and Leven; and the battle of Marston Moor was fought, July 2, and resulted in the total defeat of the royalists, the victory being principally due to the valor, energy, and coolness of Cromwell and his Ironsides. Cromwell then accompanied Manchester in the march that was made to the south, where things had gone against the parliament. He commanded the horse. The second battle of Newbury was fought, Oct. 27, 1644, the king being with his army. The royalists retreated in the night, though it can hardly be said they were defeated. Cromwell, who had highly distinguished himself in the action, and in the proceedings preliminary to it, vainly entreated of Manchester to pursue. So little energy had that general, that he allowed the king to return, assume the offensive, and carry off the artillery and stores that were in Donnington castle. Manchester was not only listless, but he was a leader of the moderate party, the Presbyterians, who were not for pushing matters to extremity with the king. He did not wish to have the royal army destroyed, as it would have been had Cromwell moved forward with his cavalry as soon as the retreat was discovered. The Independents, of whom Cromwell was the ablest, and who had been little heard of at the beginning of the dispute, were now fast rising to importance in the state and in the army; and Cromwell determined that the army should pass under their influence. He was supported by all the best men of the parliamentary party, Fairfax, Marten, Ireton, Vane, and others. The time had come for energetic action, and Cromwell from his place in parliament accused Manchester of backwardness, and of not desiring victory. He narrated all that had happened at Newbury, and bore hard upon the various commanders who belonged to the moderates. Manchester retorted in the upper house, and, in a narrative that he had written, accused Cromwell of being the cause of the failure of the campaign. He also said that Cromwell was hostile to the peerage, and to the Presbyterian ascendancy, which was no doubt the truth. The famous self-denying ordinance, brought before the house of commons Dec. 9, 1644, forbade any member of parliament from holding either civil or military office during the war. Cromwell supported it with great plainness of speech, showing that the want of success was due to the selfish ambition of certain members of both houses, who held places and commands, and who had no wish therefore to bring about the settlement of a quarrel the continuance of which they found so profitable. He also pointed out the vices and corruptions that had found their way into the army, and declared that "till the whole army were new modelled, and governed under a stricter discipline, they must not expect any notable success in anything they went about." The first ordinance failed, but a milder one was successful. It provided that members of parliament who then held offices should be discharged. The three armies then existing were formed into one, 22,000 strong. Fairfax was made lord general, and Skippon major general. The office of lieutenant general was not filled up, undoubtedly because it was meant that Cromwell should have it, in spite of the self-denying ordinance. The army was entirely new modelled, and many officers were dismissed. Cromwell had been employed in the mean time, with Sir William Waller, against the royal forces in the west; and when the time came for him to retire, Fairfax sent a petition to the commons asking that Cromwell might command the horse in his army, and many of his officers signed the petition. The house complied, and Fairfax was allowed to employ him for such time as the house should dispense with his attendance. The model had been successful in raising the character of the army, under

Cromwell's direction. Before the house had received Fairfax's petition, Cromwell had been several times engaged with the enemy, and had been victorious in every encounter. Matters looked ill for the cause everywhere save in those places where Cromwell was present, and there can be no reason for supposing that Fairfax was not sincerely desirous of his lieutenant's presence, on plain and obvious military grounds. He wrote to him as soon as he received the commons' permission, and on June 13, 1645, Cromwell joined the army at Northampton, the royal forces being six miles distant. His arrival caused the army to become active, and he was the real commander of it at once. Causing Ireton to ascertain the whereabout of the royalists, he declared for action the next day. Fairfax acquiesced, and on June 14 was fought the battle of Naseby, which was fatal to the house of Stuart. Believing his enemies were retreating, the king was led to abandon an excellent position at Harborough, and to draw up his army on ground favorable to those enemies. The action of Marston Moor was repeated on a larger scale. Portions of each army were successful, but Cromwell held his Ironsides well in hand, and assailed a body of royalist infantry after he had routed half their cavalry, and so decided the event of the day. The royalists were utterly beaten, 2,000 of them being slain and 8,000 captured. All their artillery, many thousand stand of arms, a hundred pair of colors, and all the spoil of the king and camp, fell into the hands of the victors. The most important capture was that of the king's cabinet, which afforded abundant proofs of his total insincerity. Cromwell led the pursuit to Harborough, whence he wrote an account of the victory to the speaker of the commons. This letter reached the commons before that of Fairfax, and that was Cromwell's object in writing it so soon. The reading of it was the announcement to the Presbyterians that power had departed from them. Its tone has been called regal, and it was written in the terms of a master. The very day the news reached parliament, the commons resolved that his services should be continued in Fairfax's army during the pleasure of the houses, the lords substituting three months. He followed up the victory with wonderful celerity and success. Leicester was retaken, Taunton relieved, Goring beaten, and Bridgewater stormed. Soon afterward he put down the "club men," a third party, which might have reached to formidable dimensions if they had not been thus firmly dealt with at the outset. After taking Sherburne castle, Fairfax and Cromwell besieged Bristol, which was held by Prince Rupert at the head of 5,000 men. Cromwell, who was ever for bold measures in war, advised that the place should be stormed. This counsel was followed, but the attack failed. It was, however, made with so much spirit that Rupert surrendered (Sept. 11), and the soundness of Cromwell's policy was vindicated. He then proceeded against Devizes, which he stormed. Berkeley castle shared the same fate. Winchester surrendered. Basing house, which had previously defied all attacks of the parliamentarians, fell before him. Longford house capitulated at once. He defeated Lord Wentworth at Bovey Tracy, inflicting a heavy loss on him, and taking, among other spoils, the king's standard. He and Fairfax stormed Dartmouth, defeated Lord Hopton at Torrington, and drove the last remains of the western royalists into Cornwall. Finally, Sir Jacob Astley, at the head of 3,000 horse, was routed at Stow-on-the-Wold, March 22, 1646, which was the last action of the English civil war. Sir Jacob was captured, and when taken to the headquarters of the victors he said, "My masters, you have done your work, and may go play, unless you choose to fall out among yourselves." Cromwell had indeed done his work, to use an expression of that time, not negligently. He had applied Strafford's idea of "Thorough" in politics to military operations; and nothing like what he had accomplished in less than ten months from the time he had joined Fairfax at Naseby had been seen in England since the time when Edward IV. crushed the Lancastrians at Barnet and Tewkesbury. The whole of England had been subdued, though on the 13th of the preceding June the chances were decidedly in favor of the king, whose cause had been greatly advanced in Scotland by the victories of Montrose. Had Cromwell died in 1646, he would have been entitled to a high place in the list of great commanders. In original genius for war hardly any man ever surpassed him. Yet it was to success in politics that he owed his sucess as a soldier; for if he had not carried the self-denying ordinance through parliament, the royal cause must have triumphed in 1645. The "new model," emphatically his work, as well as his conception, was the cause of the military superiority of the parliament. The time was now come when he was to be as eminent in the cabinet as he had been in the field. Parliament heaped great rewards on him. Lands of the yearly value of £2,500 were conferred on him, taken from the estates of the marquis of Winchester, and from those of the Somersets and Herberts. It was resolved that the king should be recommended to create him a baron. The king had thrown himself into the hands of the Scotch forces then in England, and had been delivered up to the English parliament. The conduct of Cromwell for some time after this event is the subject of much dispute. He is supposed to have stirred up that agitation in the army which was directed against the king, and against any settlement with him, and which Cromwell is charged with only affecting to condemn, though at a later period he visited some of the agitators with military punishment. The army appear to have formed a just estimate of the character of the king. They saw he was not

to be trusted, and they determined not to trust him; and ultimately they determined to punish him for his attacks on the liberties of England. That Cromwell had something to do with urging on the army to oppose the parliament, is very probable; and the army, in order that it might not be sacrificed by the Presbyterians, who controlled the parliament, seized the king's person, which it held until late in 1647. If the parliament had dealt honestly and fairly with the army, the troubles might have been brought to an end in 1647, supposing the king to have been capable of dealing candidly with the parliament. It was the dispute between the army and the parliament that encouraged the king so to act as rendered a settlement impossible. Though every one of his schemes had failed, though all his armies had been annihilated, though the Scotch had delivered him up to the English, and though the army of the latter had seized and were holding him, he fell into the mistake of supposing that he was necessary to them all, and that he could choose as he pleased with which party to treat. He set himself to work to outwit Cromwell. That the latter entered into a treaty with the king, and that he was supported by Fairfax and other distinguished soldiers of his party, are indisputable facts. The sincerity of Cromwell in this business is doubted by many; and that of the king is believed in by no one competent to form an intelligent judgment. There is no good reason for doubting Cromwell's sincerity. He contemplated the settlement of England on some such basis as the great political dispute was settled 40 years later. His object was a free polity, government by parliament, toleration, the dismission of the ultra royalists, and the reinstatement of strict legality. That he looked for some individual benefits is true. He was to be lord lieutenant of Ireland, a knight of the garter, and earl of Essex, a title to which one of his family might properly aspire, now that the last of its Devereux wearers was in his grave. Had the king exhibited evidence of honesty, Cromwell would have closed with him, and would have become the founder of a line of nobles; but the most complete proof was obtained by him that Charles was practising deception, and that instead of a garter for his knee, he intended to decorate his neck with a rope. Then it was that Cromwell resolved upon the king's destruction. The army leaned strongly to republicanism, and contained not a few persons who entertained extreme opinions in religion and politics. Always disliking the king, and convinced of his insincerity, the soldiers saw Cromwell's course with unfriendly eyes. The king sought to cheat every party, and was so weak as to say to Ireton, Cromwell's son-in-law, "I shall play my game as well as I can;" to which Ireton replied, "If your majesty have a game to play, you must give us also the liberty to play ours." The king soon saw that he had made a mistake. He believed his life was in danger from the more violent portion of the soldiery, known as Levellers; and Cromwell is supposed to have feared that the monarch would be seized by them, and to have operated on the royal mind, which was also startled by intimations from the Scotch commissioners. Charles therefore left Hampton court, in disguise, on the night of Nov. 11, 1647, and took refuge at Carisbrooke castle, in the isle of Wight. Hammond, governor of the island, was a connection of Cromwell's by marriage. The resolution of the house of commons not to hold any more treaties with the king led to much excitement in England, and to some fighting. Cromwell proceeded to Wales, where he put down the royalists with the strong hand. Then came his campaign against the Scotch, popularly called the commencement of the second civil war. The majority of the Scotch were for setting up the king again, and they invaded England with a large army, which was joined by some English cavaliers. Hastening to the north with such rapidity that the Scotch knew not of his arrival, Cromwell effected a junction with Lambert. Their united forces numbered only 8,600 men; the enemy were 21,000. On Aug. 17, 1648, the battle of Preston was fought. The enemy lost several thousand men in the battle, and the duke of Hamilton, their commander, was among the prisoners. Following up the Scotch with great vigor, Cromwell completed their ruin, so that they were mostly killed, captured, or dispersed. The victor pushed on to Edinburgh, where he was welcomed by the extreme anti-Stuart party, headed by the marquis of Argyle. The king's fate was determined by these successes. The army caused him to be removed from the isle of Wight to Hurst castle, where he was civilly treated, but whence escape was impossible. The parliament voted to close with the king, but the majority were turned out of the house of commons by Col. Pride, or by other soldiers. The king was then brought to Windsor castle. The ordinance for erecting the high court of justice was passed, and the king was tried and executed. That Cromwell was at the bottom of these doings there can be no doubt. He was the most powerful man in the state. So far as any one man could be said to rule, he was then the ruler of England. His name stands third on the death warrant of the king, which he signed as a member of the high court. He refused to use his influence to save the king's life, and there appears no ground for believing that his conscience ever troubled him for the part he had in that "memorable scene." When the council of state was constituted, Feb. 13, 1649, for performing the executive duties of government, Cromwell was appointed one of its members. He was made lord lieutenant of Ireland, and proceeded to that country at the head of 12,000 men, reached Dublin Aug. 15, and instantly commenced a campaign as brilliant as it was sanguinary.

Drogheda was stormed in September, and the entire garrison either butchered or sent as slaves to the plantations. Most of the victims were English royalists, and their commander was an Englishman. Cromwell's object was to strike terror into the enemy, and so prevent further resistance. He did not wish to be long absent from England. He was mostly successful, but at Wexford the horrors of Drogheda were repeated; and at Clonmel he met with so stern a resistance that he granted an honorable capitulation, owing to his impatience to cross the channel. Appointing Ireton, his son-in-law, lord deputy, he hastened to London, which he reached May 31, 1650, and was received with great enthusiasm. His presence was much needed. The Scotch had set up Charles II. as a covenanted king, and intended to invade England for the purpose of forcing him on that country. The government of the commonwealth determined to anticipate them, and to send an army into Scotland. Fairfax refused to serve, and Cromwell was made general-in-chief and lord general. He entered Scotland at the head of 11,000 men. Lesley commanded double that number of Scotch troops, and, had he been left free to follow his own will, would have baffled the invaders. He held a strong position between Edinburgh and Leith, and, while he refused battle, harassed Cromwell and destroyed all sources of supply. The country was wasted on all sides, the Scotch following their old modes of resistance to English invasion. There was some fighting, in which the Scotch showed spirit, but generally were beaten. Cromwell was forced to retreat to Dunbar. On Aug. 17 he again advanced, his aim being to cut off the communication between Edinburgh and the western counties; but for this movement Lesley had been prepared, and he instantly took a new position, not less strong than that which had previously baffled the English. The latter vainly assaulted several posts garrisoned by the Scotch, and occasionally were defeated in affairs of cavalry. The foot had some skirmishing, and there were brisk cannonades. In the end Lesley won, Cromwell retreating, and the Scotch horse harassing him as his demoralized army, which had suffered much from sickness, fell back once more upon Dunbar, his grand depot and base of operations. No army ever found itself in a worse position than that in which Cromwell had now placed his. Dunbar is in a valley, surrounded on three sides by hills, through which there are but two narrow passes. The Scotch had possession of the hills and passes, and by the labor of a few hours might have shut up the English in a trap. Such was Lesley's plan; but he had in his own camp far worse enemies than he had in that of Cromwell. The preachers were bent upon Cromwell's destruction, and thought it could be accomplished with the sword. Their influence was overwhelming, and, after they had succeeded in driving from the army all the cavaliers in it, they compelled Lesley to lead it into the plain, thus giving up an impregnable position. Meantime the English in Dunbar, after discussing some desperate expedients, the adoption of either of which would have been an admission of defeat, resolved to send out a strong column to the right on the morning of Sept. 3. This column marched and fell in with the Scotch, who had just descended from the hills, whereupon the battle commenced. The result was doubtful until a body of English cavalry came to their countrymen's assistance, and so the Scotch were routed, their very excess of number causing their defeat to be the more complete. On the other wing, and in the centre, the English were also successful. The vanquished lost 12,000 men, mostly prisoners, all their artillery, 200 colors, and 15,000 stand of arms. Advancing for a third time into Scotland, Cromwell took Edinburgh, the castle holding out till late in December. The winter was passed in political intrigues and in some military operations in the southern districts. In the spring, when about to take the field in force, he was seized with ague, and was not able to act till July 1, 1651. Lesley had done his best to reorganize his army, and though much harmed by the continued interference of the preachers, he baffled Cromwell for some weeks. The latter sent a corps into Fifeshire, which defeated the Scotch there, and the English were enabled to besiege and take Perth. While thus engaged Cromwell learned that the enemy had marched into England, which course had been taken by Charles II. in the belief that he should be joined by the English cavaliers and the people generally, almost all of whom were opposed to the new government. The Scotch reached Worcester, where they halted; but if they had pushed on to London, it would have fallen into their hands, and with it the whole country. The prompt and skilful measures taken by Cromwell on hearing of Charles's march had brought 30,000 English troops to the vicinity of Worcester; the king had but 13,000. On Sept. 3, the anniversary of Dunbar, the battle of Worcester was fought, and ended in the annihilation of the invaders, 2,000 of whom were killed and 8,000 captured. Cromwell believed it to be "a crowning mercy," as it was, for it was fatal to the royal cause; and had the victor not died prematurely, or had his successor been a man of talent, a new dynasty, if not a new polity, would have been set up in Britain. The government showed itself grateful to the victor; an estate of £4,000 a year was conferred on him, and Hampton court was prepared for his abode; and Sept. 3 was ordered to be observed as an anniversary for all time to come. But Cromwell had now determined to settle the state in his own way, with himself as its chief. In 1647 he would have been content with the highest honors of a subject, could he have relied upon the king; but in 1651 he had put the king to death, had conquered Wales and Ireland, had won three

of the greatest battles of that age, and had driven the Stuart family from all its dominions. With the increase of his influence and power his political horizon had extended. He aimed at the throne because the kingly office and title were grand elements of strength. He wished to be a liberal constitutional monarch, and had he been met in his own spirit such a monarch he would have become. But he encountered opposition from many who had thus far acted with him, and the soldiery themselves, attached though they were to his person and ready to do most of his work, were sincerely devoted to republicanism. With their consent he might be anything he chose but king. The best of the republican statesmen, headed by Vane, were for maintaining the existing order of things; and they were right, the government that existed since Charles I.'s execution having proved itself worthy of trust, and having managed the internal affairs of the state, and its foreign policy, with a vigor and a prudence that had not been known since the death of Elizabeth. Could Cromwell have been content with a just share of power in the new government, it would have been maintained; and as the new system would then not have depended on the life of one man, the royal family would have been kept out for ever. But he was bent upon being sole ruler. The 19 months that followed the final overthrow of the royalists were spent in discussions and intrigues. In this period, however, belongs the passage of the navigation act, which secured England's maritime superiority over her great rival, the Dutch republic. On April 20, 1653, Cromwell drove the remnant of the long parliament out of the house of commons by force. The council of state was broken up the same day. For some weeks England was near to anarchy. On June 6 Cromwell issued summons to 156 persons to meet at Westminster as a parliament. All but two obeyed, and the new parliament met in July. This was the famous Barebone's parliament, scurrilously so named after one of its members, Praise-God Barbone or Barebone. All but 17 of the members were summoned for England, Ireland and Wales having 6 each, and Scotland 5. Cromwell made to this body a long speech, and resigned his power into its hands. The parliament contained few men of influence, and its conduct only added to the public confusion. On Dec. 12 a portion of its members resigned their power into the hands of Cromwell, and the rest either retired silently or were driven out by soldiers from their hall. On Dec. 16 came forth the new institute of government, by which Cromwell was made lord protector, and the supreme legislative authority was vested in him and a parliament, which was not to exceed 400 members for England, 30 for Scotland, and 30 for Ireland. The protector was to be assisted by a council of state. There were many judicious provisions in the institute, among which was an improvement of the representation. Parliament was to meet in September, 1654, and until that time the protector and his council were to have unlimited power. Cromwell was to hold office for life, and the council of state was to choose his successor, but at a later period Cromwell was authorized to name him. So far as he could, the protector revived monarchical forms. A variety of ordinances were passed of an arbitrary character, and many acts of the government would have disgraced the worst times of the Stuarts, Cromwell's defence being the necessity of the case. There was no lack of vigor, and though the protector did all that he could to conciliate the royalists, he found them inveterately hostile. A plot to assassinate him was detected in 1654, and two of the conspirators were executed. The protector's foreign policy was bold and manly, save that in making peace with the Dutch he abandoned the high position which the statesmen of the commonwealth had assumed, though the war had been successful. Parliament met Sept. 3, 1654. Care had been taken to exclude from it men whose hostility to the protectorate was supposed to be unchangeable. Still some republicans were chosen, and Bradshaw, their leader, moved for a committee of the whole to deliberate whether the house would approve of the new system of government, which was carried. Warm discussions followed, upon which the protector locked the members out of their hall, and would allow none to return to it who would not sign an engagement that the government was legal. Nearly two thirds signed, and the rest refused; but the majority soon fell to questioning the "institute," and government was in a minority, whereupon Cromwell dissolved the parliament. A despotism was established, followed by both royalist and republican plots, which failed, and many of those engaged in them were punished. The royalists were very harshly dealt with. England and Wales were divided into 12 districts, the military command in each being vested in a major general. Besides having control over most of the ordinary affairs of life, the commissions of these officers contained a special order from the protector that they should observe and follow such directions as they should from time to time receive from him. Never before or since has England known so iron a rule, and to the wrongs that were common under it must be attributed not a little of that folly which, five years later, brought about the restoration of the Stuarts. To atone for this denial of freedom to his subjects, the protector gave them glory. France and Spain contended for the English alliance, and France succeeded. The Spanish possessions in America were assailed, and Jamaica was taken. Admiral Blake was successful in the Mediterranean, against the Barbary powers and Tuscany. The influence of England put an end to the massacre of the Waldenses.

Rich spoils were taken from the Spanish fleets. Appeals were made to Cromwell for assistance from various states. These proceedings were expensive, and funds ran so low that it became necessary to call a parliament, to meet Sept. 17, 1656. The elections caused much excitement. To prevent the return of eminent republicans, some of them were imprisoned. But the majority was adverse to Cromwell, who thereupon excluded more than 100 of them from the house. Wishing to gain popularity, he allowed parliament to put an end to the power of the major generals. It was moved that the protector should take the title of king, and, after much debating and intriguing, this was carried, as were some other provisions calculated to restore the old English polity. Cromwell longed for the crown, but he durst not accept it against the determined opposition of some of the highest military officers and the general sense of the army; he accordingly refused the offer. The other provisions were adopted, and the lord protector was newly inaugurated, with great pomp and solemnity. Parliament adjourned, to give him time to create a house of lords. When it reassembled, the excluded members having been restored, the commons refused to recognize the other house, and Cromwell dismissed this, his last parliament, his last words to it being, "Let God judge between me and you!" to which some of the republicans answered, "Amen!" The brief remainder of his life was passed amid plots having his murder for their end. He had such good intelligence that everything became known to him, and the plots uniformly failed. Yet the precautions he had to adopt were of a humiliating character, and resembled those of the Greek tyrants. He was much in need of money for the public service, but he durst not impose taxes by his own authority. Meantime his foreign policy went on successfully, the bonds of alliance between England and France being of the strongest nature. English forces fought side by side with the French against the Spaniards, the latter having some of the banished English cavaliers under their banners. Cromwell told the men of the army he sent to the aid of Louis XIV. that they were to show the same zeal for the monarch that they showed for himself; and Louis and his minister (Mazarin) evinced their attachment to Cromwell in various ways. Had the protector lived, he would probably have found the means of carrying on his government. Another parliament was thought of, from which the republicans were to be excluded, and Cromwell's last public act was to dissolve the committee that had the subject under deliberation. In the summer of 1658 his second daughter, Elizabeth Claypole, died; and as she was his favorite, the effect on his shattered body and disturbed mind was serious. After some previous illness, he was forced to confine himself to his room, Aug. 24, 1658, from a tertian fever. On Sept. 3, the anniversary of Dunbar and Worcester, and known as his "fortunate day," he died, at 4 o'clock in the afternoon, and in the midst of the most terrible storm of those times, which both friends and enemies connected with his death, but with different associations. The remains of the protector were soon consigned to Henry VII.'s chapel, as it was impossible to keep them. The public funeral took place Nov. 23. After the restoration of the Stuarts, the body of Cromwell was disinterred and gibbeted at Tyburn, and then buried under the gallows, the head being placed on Westminster hall.—Cromwell had five sons: Robert, born 1621, died 1639; Oliver, born 1623, died in battle, 1648; James died in infancy; Richard and Henry survived him. He had four daughters: Bridget, married first to Ireton, and then to Fleetwood, died at the age of 57, in 1681; Elizabeth, born 1629, married to John Claypole, died 1658; Mary, born 1637, married to Viscount (afterward earl of) Fauconberg, died 1712; Frances, born 1638, married first to Robert Rich 1657, and, Rich dying in a few months, then to Sir John Russell, died 1721. The wife of the protector survived him 14 years, dying Oct. 8, 1672, after having lived in retirement since the downfall of her family.—There are many lives of Cromwell, the best of which is that in Mr. Forster's "Statesmen of the Commonwealth of England." Carlyle's "Oliver Cromwell's Letters and Speeches" is a work of great excellence. Gleig's "Lives of the most eminent British Military Commanders" contains a good military biography of the protector. Most of the other biographies are worthless. Clarendon's great work bears hard upon Cromwell. Even the able volumes of M. Guizot are tinged with his peculiar views, and are not always just either to the statesmen of the long parliament or to Cromwell individually; but they contain much matter not to be found elsewhere. Sanford's "Studies and Illustrations of the Great Rebellion" contains much valuable matter concerning Cromwell, admirably told, but it terminates with the battle of Marston Moor. It corrects many errors in Cromwell's history that had long been received as truths. **II. Richard,** the third and eldest surviving son of Oliver Cromwell, and second lord protector, born at Huntingdon, Oct. 4, 1626, died at Cheshunt, near London, July 12, 1712. In 1647 he became a student of Lincoln's Inn, where he remained two years. He did not study much, but devoted himself to the pleasures of the field and the table, to the former of which he had become attached while leading a rural life in the early years of the civil war. In politics he is said to have been a royalist, and to have interceded with his father for the king's life. In 1649 he married Dorothy, daughter of Richard Mayor of Hursley, where they resided during most of Oliver's protectorate, Richard indulging in hunting and hospitality. Oliver did not think highly of his son's

capacity, and was pleased to see him remain in the country. When the protectorate was established, Richard was elected to parliament for various places, on different occasions, and Oliver endeavored to train him to the art of government. He succeeded his father as chancellor of Oxford university, and was made a colonel and a lord of trade and navigation. When the protector sought to create a house of peers, his eldest son was placed at its head, with the title of the Right Hon. Lord Richard, &c. On Oliver's death, Richard succeeded to the place of lord protector. A parliament was called, which met Jan. 27, 1659, to which he made a sensible speech, and for a short time things went on well. In parliament, however, he was not strong, and the army was not attached to one who was at heart a royalist. A meeting of the officers was held, at which it was resolved that the army should be commanded by some one person. The protector applied to parliament for advice, at the suggestion of the council; and that body condemned the action of the army, and declared that the officers should hold no more meetings without the protector's permission. This brought matters to a crisis. The officers compelled Richard to dissolve parliament, which event was soon followed by his own resignation. He was not equal to the place in which circumstances had placed him. To the remonstrances his determination excited he replied that his resolution was fixed, that violent counsels did not suit him, and the like. His retirement drew upon him reproaches from all sides, which have been repeated for two centuries. Macaulay speaks of him as "that foolish Ishbosheth," who could not preserve "an authority which any man of ordinary firmness and prudence would have retained." Just before the restoration the Cromwellians wished to replace Richard at the head of the nation; but it was too late for such an act to be attempted, even if he had himself been willing to return to Whitehall. He retired to Hursley, his wife's estate. In July, 1660, he left England for the continent, but less on account of political than for personal reasons. His debts amounted to £30,000. He resided at Paris, under the name of Wallis, for 20 years, making two visits to Geneva. He was little known, and sometimes had his feelings wounded by expressions of contempt for his poltroonery from strangers. He returned to England in 1680, his debts having been paid, took the name of Clarke, and resided at Cheshunt. His life was retired. One of his few friends was Dr. Watts, who never heard him mention his former greatness more than once, and then indirectly. A lawsuit with his daughters, in his extreme old age, brought him before the public in the reign of Queen Anne. The judge treated him with much consideration, and his conduct was approved by the queen. Richard won his cause. He lived to be nearly 86, dying at Cheshunt, in the house of Sergeant Pengelley, who was supposed to be his natural son, and who rose to eminence in the law. He was buried in the chancel of Hursley church, where one of his daughters erected a monument to his memory. He left no legitimate son. His son Oliver was active in the revolution of 1688–'9, and offered to raise a regiment to serve in Ireland, provided he were allowed to nominate his captains; but the name was yet too formidable to warrant government in accepting the offer. He died May 11, 1705.

III. Henry, second surviving son of the first lord protector, born at Huntingdon, Jan 20, 1628, died March, 23, 1673. He was educated at Felstead, but as he entered the parliamentary army at the age of 16, he could not have known much of schools. Before he was 20 he had a troop in the lord general Fairfax's life guards. He was made a colonel in 1649, and went with his father to Ireland, where he served throughout those fierce wars that subjugated the country, distinguishing himself on several occasions. In the first parliament that his father called, the "Barebone's parliament," he sat as one of the six Irish members. He was married in 1653 to Elizabeth, daughter of Sir Francis Russell. The university of Cambridge elected him to parliament in 1654. In 1655 he was sent to Ireland as a major general, and eventually he was made lord deputy. He was well received in that country, and he justified the reception by the admirable manner in which he governed it. Men of all parties united in praising his wise and benevolent action; and Ireland rose rapidly to prosperity under his rule. He is said to have inclined in politics to royalist principles, which was not uncommon with members of Cromwell's family. When Oliver died, Henry exerted himself to have his brother's authority acknowledged in Ireland, and with entire success. The troubles that befell Richard in England, however, soon had a prejudicial effect on Irish affairs. Henry was annoyed in various ways by his brother's enemies, and he sought to throw up the government of Ireland, in order that he might reply to attacks that had been made on him in England, and to assist the protector. His request was refused, probably because the republicans feared him, well knowing that he was a very different man from Richard. When the protector retired, Henry resolved to place the Irish government in the hands of Charles II.; but parliament recalled him, and placed the government in the hands of commissioners. He obeyed the summons, and parliament expressed approbation of his conduct. So poor was he that he had not money enough of his own to pay his expenses from Dublin to London. The readiness with which he surrendered his government does not confirm the common impression that if he had been appointed his father's successor, he would have maintained the place. He resided for some years with his father-in-law, Sir F. Russell, at

Chippenham. Thence he went to a retired estate of his own, called Spinney Abbey, near Soham, Cambridgeshire, where he passed the remainder of his days in farming. Charles II. is said to have visited his house when going from Newmarket to London; and when he heard that Henry was suffering from the stone he expressed sympathy with him, and according to one account even prescribed for him, the king being a dabbler in medicine. It was of this complaint that Henry died. He was buried in Wicken church, and a stone was placed over his remains, with a Latin inscription, stating merely the place of his residence, his age, and the dates of his birth and death. He had seven children. His last male descendant, and great-grandson, died in 1821, at Cheshunt, aged 79. He had been a solicitor, and was the last representative of the great protector.

CROMWELL, Thomas, earl of Essex, born toward the close of the 15th century, died July 28, 1540. The exact date of his birth is unknown, though one account says he was born in 1498. His father, one of the Lincolnshire Cromwells, moved to the capital, and had an iron foundery at Putney. Cromwell's father died when the future statesman was very young, and the accounts that are given of the orphan's early days are unworthy of confidence. He is said to have been a clerk at Antwerp, and to have been one of a party which went on a private mission to Rome. The first clear sight of him represents him a ragged youth in the streets of Florence, in 1515, where he attracted the attention of Frescobaldi, a great banker who had extensive business connections with England. To his inquiries, Cromwell stated who he was, and that he had been page to a French foot soldier. Frescobaldi took him to his house, relieved his wants, and furnished him with the means of returning home. He found his mother, who had married a second time, again a widow, and he carried on his stepfather's business, that of a clothier. This brought him into connection with the court, as he furnished the royal liveries. After holding some post in the household of the marchioness of Dorset, he finally passed into the service of Wolsey, who saw his talent, and as early as 1525 employed him to visit and break up certain small monasteries, the property of which had been granted by the pope for the foundation of colleges. He remained with Wolsey until the cardinal's ruin in 1529, and contended so ably in the house of commons against the bill of impeachment introduced for the completion of the minister's fall, that he caused it to be thrown out. This fidelity to his patron won him great applause, including that of Henry VIII., who could appreciate generosity in others if he could not practise it himself. His talents, too, must have recommended him to the king, who appointed him his secretary and government organ in the house of commons. This necessarily made him the leader of the English reformation. Promotion rapidly followed his entrance into the king's service. He was knighted, sworn of the privy council, and appointed to several offices. The high posts of secretary of state and master of the rolls soon followed, and he was elected chancellor of the university of Cambridge. In 1535 he was created vicar general, or visitor general, with power to visit all the monasteries in England, and issued a commission for a general visitation of the religious houses, the universities, and other spiritual corporations. He did not become vicegerent in ecclesiastical matters until July, 1536, having just previously been created Baron Cromwell and lord privy seal. The visitorial power was executed with great vigor, the other side said with great cruelty and gross injustice. The proceeding was one of the first importance, and struck a deadly blow at the ascendancy of Rome in England. The king was satisfied with Cromwell's doings, and the work of the reformation was much advanced. Sweeping changes were made in the religious system of England. The articles that were adopted by the convocation of 1536 were not acceptable to either Protestants or Catholics, but the government, of which Cromwell was chief minister, was strong enough to enforce them. The complete edition of the English Bible, known as the "Great" or "Crumwell," was published three years after, with the arms of Cromwell on the title page. He was now at the height of his power, was created earl of Essex, constable of Carisbrooke castle, and lord of Okeham, and received valuable estates made up from the possessions of the dissolved monasteries. But he had enemies on all sides. The nobles hated him as an upstart; the people murmured at the taxation imposed upon them; the Catholics lay in wait to entrap him, in which they soon came to have the support of the king, who wished to be his own pope, and was tired of his fourth wife. With the view of connecting England with the Lutherans, Cromwell had promoted the marriage of Henry with Anne of Cleves. The lady was very pious, very virtuous, and very ugly. Henry was disgusted with her, and refused to regard her as his wife. An attempt to form an Anglo-German league failed, and Henry was left alone at the very time when Charles V. and Francis I. were drawing together, and the Lutherans were deluded by the emperor. Cromwell continued to protect the Protestants, and only a few days before his fall he sent a Catholic bishop to the tower. On June 10, 1540, he was arrested, on the charge of high treason, while sitting at the council board, and sent to prison. Parliament was in session, and a bill of attainder was soon passed. The only friend Cromwell found was Cranmer, who desired he should be spared. The prisoner made a pathetic appeal to the king, who was moved by it, but would not pardon him. He was be-

headed July 28, suffering cruelly at the hands of an unskilful executioner. Government had the baseness to place in his mouth a dying speech that he never made, but which has passed into history, so that he was represented to have died in the faith of that church which he had done so much to overthrow in England. There are few great men of whom so little is accurately known as Thomas Cromwell. He played for eight years the highest part in England, and in one of the most fruitful of revolutions. He stamped his mind on the English constitution in church and state. That he was guilty of many acts of injustice and cruelty is indisputable, but his memory is entitled to the plea that he was placed in a position where no man could have preserved his virtue. The best account of Cromwell is to be found in Froude's "History of England from the Fall of Wolsey to the Death of Elizabeth."—Cromwell was married to a lady of the name of Williams, by whom he had one son, Gregory, who was made Baron Cromwell of Okeham, at the same time that his father was created earl of Essex. This son was married to Elizabeth Seymour, a sister of Henry VIII.'s third queen. The posterity of this couple long enjoyed the titles of Lord Cromwell and earl of Ardglass (1624), the last earl dying in 1687.

CRONSTADT, or **Kronstadt,** the most important seaport and naval fortress of Russia, the seat of the admiralty, and the station of the Baltic fleet, situated in the S. E. part of a small, arid, and rocky island, called Kotlinoi Ostrov (Kettle island), at the E. extremity of the gulf of Finland, opposite the mouth of the Neva, in the government and 13 m. W. of the city of St. Petersburg; pop. in 1867, 45,155. The town was built by Peter the Great in 1710, the island having been conquered from the Swedes in 1703 by Menshikoff, while Charles XII. was engaged in his Polish campaign; it received its name in 1721, was fortified during the same reign, and subsequently under Elizabeth, Catharine II., Paul, Alexander I., and Nicholas, being destined from its foundation to become the great bulwark of the new Russian capital, and a chief naval stronghold of the Baltic. The southern channel, which separates the island from the mainland, is narrow and commanded by a small fortified islet, and allows single vessels only to pass; the opposite channel, the broader, but from its sand banks still less practicable entrance to the shallow eastern bay, called the bay of Cronstadt, is commanded by the batteries of the rock of Risbank, and the citadel of Kronslot, situated on two small islands, each mounting more than 200 guns. Numerous forts and batteries defend all other parts of the island, which forms an irregular triangle, having its base toward St. Petersburg. Near its N. W. point is a lighthouse. The town is regularly built, has fine and well paved streets and squares, three gates, and Greek, Anglican, Lutheran, and Roman Catholic churches. Other remarkable buildings are the exchange, custom house, arsenal, admiralty house, cannon foundery, barracks, and magazines; the marine hospital, with 3,000 beds; a house of Peter the Great, now the country residence of the military governor, whose garden still contains a few oaks planted by the hands of that czar; and a palace in the Italian style, erected by Menshikoff, and now used as a naval school.



Cronstadt.

The last of these buildings is situated between the canals of St. Peter and Catharine, which intersect the town. The former canal is constructed of granite, and is 2,160 ft. long by 90 ft. wide; it is in the form of a cross, and communicates by one of its arms with a vast dock, where 10 ships of the line can be repaired at once. The Catharine canal, 2⅛ m. long, communicates with the merchant harbor, thus enabling the merchantmen to take their stores and provisions directly from the warehouses of the town. The quays, constructed by the emperor Nicholas, are all of granite, and on a grand scale. Except the government buildings, about 200 in number, all the older houses of the town are low, and mostly of wood. The harbor of Cronstadt, S. of the town, consists of three sections: the military, outer harbor, capable of containing 35 ships of the line, besides smaller vessels; the middle harbor, for the fitting out and repairing of vessels,

the hulls of new ones being brought over for equipment from St. Petersburg; and the innermost harbor, running parallel with the preceding, used only by merchantmen, and sufficient for 1,000 sail at a time. All these are well secured, but in consequence of the freshness of the water from the proximity of the mouth of the Neva, vessels cannot be preserved in them longer than 20 years. From November to the end of April they are blocked by ice. Notwithstanding the shortness of the shipping season and the shallowness of the bay, which at the bar is only 9 ft. deep, two thirds of the foreign trade of Russia passes through this port. The entrances of vessels, which in 1714 were 16, now amount to about 3,500 a year. In summer the surrounding sea is enlivened by steamers regularly running between Cronstadt and St. Petersburg, Helsingfors, Stockholm, Stettin, Lübeck, Havre, &c. Cronstadt was inundated in 1824, and blockaded in 1854 by the British fleet under Napier.

CRONSTADT, Transylvania. See KRONSTADT.

CROOKS, George Richard, D. D., an American clergyman, author, and editor, born in Philadelphia, Feb. 3, 1822. He graduated at Dickinson college in 1840, entered the ministry of the Methodist Episcopal church in 1841, and went to labor as a pioneer in Illinois, but was recalled to Dickinson college, where he spent seven years as tutor, principal in the preparatory school, and adjunct professor of Latin and Greek. In 1848 he resumed the pastoral office, and was stationed successively at Philadelphia, Wilmington, Del., New York, and Brooklyn. In 1860 he became editor of "The Methodist" newspaper, in New York. He has prepared, in conjunction with Dr. McClintock, a series of "First Books" in Latin and Greek (1846–'7); supervised an edition of Butler's "Analogy," for which he furnished an analysis, index, and biography (1852); and, in conjunction with Prof. A. J. Schem, published a "Latin-English School Lexicon" (1858).

CROPSEY, Jasper Frank, an American artist, born at Westfield, Richmond co., N. Y., Feb. 18, 1823. About the age of 14 he commenced the study of architecture, which at the end of five years he was obliged to relinquish on account of ill health. Having received a few lessons in water colors, he devoted himself thenceforth to landscape painting, and his third picture, a view of Greenwood lake in New Jersey, procured his election as an associate of the American academy of design, of which in 1850 he became a full member. In 1847 he went to Europe, where he spent three years, mostly in Italy, painting "The Pontine Marshes" and "Lake Nemi." Among his most successful productions after his return to America were "The Sibyl's Temple," "American Harvesting," "Peace" and "War," and "Niagara Falls." In June, 1856, he went to England, where he resided seven years, and painted many pictures, among which are "The Backwoods of America," "Pæstum," "Corfe Castle," "Richmond Hill," and "Warwick Castle." He returned to America in 1863.

CROQUET. See supplement.

CROSBY, Howard, D. D., an American clergyman, born in New York, Feb. 27, 1826. He graduated at the university of New York in 1844, and was professor of Greek in that institution from 1851 to 1859, when he resigned to take the Greek professorship in Rutgers college, New Brunswick, N. J. In 1859 he received the degree of D. D. from Harvard university, and in 1872 that of LL. D. from Columbia college. In 1861 he was ordained, and in addition to his professorship became pastor of the first Presbyterian church in New Brunswick. In 1863 he resigned both places to assume the pastorate of the Fourth avenue Presbyterian church in New York; and in 1870 he was chosen chancellor of the university of the city of New York. Besides numerous sermons, addresses, and contributions to theological periodicals, he has edited the *Œdipus Tyrannus* of Sophocles (1851), and is author of "Lands of the Moslem" (1850), "Notes on the New Testament" (1861), "Social Hints for Young Christians" (1866), "Bible Manual" (1869), "Jesus, his Life and Works as narrated by the Four Evangelists" (1870), "The Healthy Christian" (1872), and "Thoughts on the Decalogue" (1873).

CROSLAND, Mrs. Newton, better known by her maiden name of CAMILLA TOULMIN, an English authoress, born in London, June 9, 1812. She first appeared in print in 1838 as the author of a short poem in the "Book of Beauty," soon after which she became an active contributor to periodicals, and edited for several years the "Ladies' Companion and Monthly Magazine." In 1848 she married Mr. Newton Crosland, a merchant and literary man of London. Her principal works are: a volume of poems, "Lays and Legends illustrative of English Life;" "Partners for Life, a Christmas Story;" "Stratagems, a Tale for Young People;" "Toil and Trial, a Tale of London Life;" "Lydia, a Woman's Book;" "Stray Leaves from Shady Places;" "Memorable Women;" "Hildred the Daughter;" "Mrs. Blake" (1862); and "The Island of the Rainbow," a fairy tale (1865). In 1854 she became interested in the subject of spiritualism, and in 1857 published "Light in the Valley: my Experiences in Spiritualism." She has also written many songs.

CROSS (Lat. *crux;* Fr. *croix*), a sacred symbol in the Christian and more ancient religions. While the use of the cross as an ornament or as a religious emblem is traced to a remote antiquity, its employment as an instrument of punishment is scarcely less ancient; but until the time of Christianity there was no known connection between the two. The many varied shapes in which it appears may be resolved into four simple forms. The cross of four equal arms meeting at right angles,

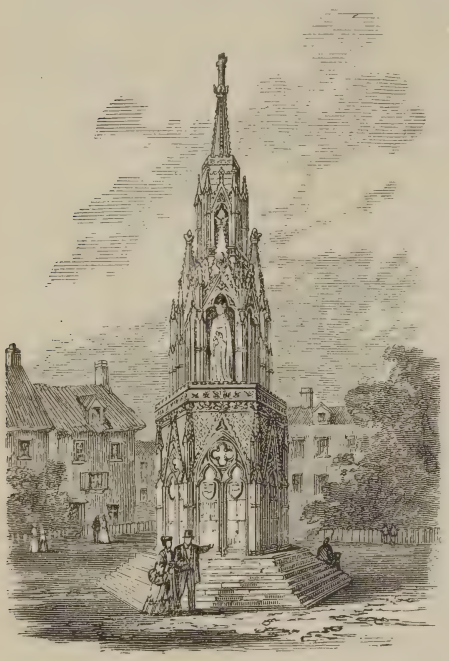


, commonly called the Greek cross, is found

on Assyrian tablets, on Egyptian and Persian monuments, on early Asiatic and Greek coins, and on Etruscan pottery. In Egypt this cross, enclosed in a circle, was the symbol of Kneph; on eastern monuments it appears often beneath a circle or globe. In its oblique form, ⨯, called by Lepsius *crux decussata*, and vulgarly, although on no good grounds, St. Andrew's cross, it is no less common in ancient sculpture. The Latin cross, or *crux immissa*, †, is also found on coins, medals, and monuments anterior to Christ. The cruciform sceptres in the hands of Astarte on Asiatic medals, and the symbols in the mysteries of Venus and of Mithra, have been supposed to bear some relation to the four elements which, in the hands of the divine creators, were the agents of creation. The *crux commissa* or *patibulata*, ⊤, sometimes called the *tau* cross from its resemblance to the Greek letter of that name, is a mystic symbol of very ancient and very uncertain origin. Some archæologists consider this the oldest form of the symbolic cross, and that the Greek cross is only its double. In its most ancient use it was probably a phallic emblem, the type of the active principle of nature. In the *crux ansata*, ☥, the Egyptian symbol of life, in which form it most frequently appears, some see the union of Osiris and Isis, the active and passive elements. Sir Gardiner Wilkinson notes the remarkable resemblance of the Egyptian word signifying life (*ônh*) to the *yohni lingam* of the Hindoos. By others it is regarded as the symbol of eternal life, or the new life promised to neophytes after initiation into the sacred mysteries. Whatever may have been its hidden meaning, the *crux ansata* is a common figure on Egyptian monuments, and is constantly seen in the hands of Isis, Osiris, and other divinities; Layard found it on the sculptures of Khorsabad and on the ivory tablets of Nimrud; and it is carved on the walls of the cave temples of India. When the Serapeum at Alexandria was destroyed by order of Theodosius, the Christians saw in this figure, which they found sculptured on the stones, a sign prophetic of the coming of Christ, and they modelled on the same type the symbol of redemption. After this time the *crux ansata* appears occasionally on Christian monuments, and some have believed it to be the origin of the monogram of Christ; but that is undoubtedly of an earlier date than the destruction of the temple of Serapis. The cross was a common symbol among the British, Irish, and Gallic Celts. The shamrock of Ireland derives its sacredness from its resemblance to it in form; and in the mysticism of the druids the trefoil had a peculiar significance. In Scandinavian mythology the hammer of Thor, the terrible *mjölnir*, sometimes used to bless the marriage tie, was the cross. Among the stone implements found in the shell mounds of Denmark are cruciform hammers, with the hole for the haft at the intersection of the arms, which are of equal length. These were probably used in the sacrifice of victims to Thor, but the cross of Thor is usually represented as *cramponnée*, ✠. This is a symbol of wonderful diffusion. It is the sacred emblem of Vishnu and the *swaslika* of the Buddhist; it is found on Celtic monuments, on Etruscan cinerary urns and those taken by Cesnola from the Phœnician tombs of Cyprus, and on the oldest Greek coins, notably those of Chalcedon, Syracuse, and Corinth. The Spanish conquerors of the new world found crosses of stone and of wood erected in Mexico and Central and South America. The Muyscas and the Mayas reverenced it, and among the Toltecs it was called the "tree of nutriment" or "tree of life." In the ruins of Palenque and in those of some of the Central American cities, of unknown antiquity, it is often met with on sculptured stones, with surroundings which prove its sacred character.—The cross was an instrument of punishment among nearly all ancient nations, its use for this purpose having been suggested probably by the practice of tying criminals and captives to trees for torture or death. It was also frequently set up *in terrorem* in public places, like the gallows in later times. Its simplest form was an upright stake, on which the malefactor was sometimes impaled and sometimes fastened with cords or nails. Of the compound cross, besides those already mentioned, other forms were occasionally used: on one, Y, the person was sometimes suspended head downward; on another, ⊓, he was hung by fastening a hand at one corner and a foot at the other; and on still another, ⊓, the body was placed on the central upright, and the arms and legs were stretched to the two parallel beams. The cross often had a small projection on which the body rested as on a seat, and sometimes a kind of shelf for the feet. The transverse beam was frequently separate from the upright, and it is probable that this was the only part borne by the criminal to the place of execution. The form of the cross on which our Saviour suffered is not known, but it is generally supposed to have been the *crux immissa*. On a design recently discovered on a wall in a palace of the Cæsars on the Palatine, supposed to belong to the beginning of the 3d century, some pagan in derision of the Christians (who were supposed to worship an ass's head) had drawn the figure of one crucified with an ass's head. The cross is the *crux patibulata* or *commissa*, and over the head of the crucified is fixed an upright rod to support the inscription. (See Garucci, *Il crocifisso graffito in la casa dei Cesari*.) This form is also frequent on early Christian tombs. In a sepulchral marble of the 3d century (De' Rossi, *Bollettino*, 1868, p. 35), found in the cemetery of Callistus, is this

word: IRETNE. De' Rossi affirms that no monument earlier than the 5th century offers any other form of the cross than the *crux commissa*. St. Jerome compares it to a bird flying and to a man swimming, and it is represented in the commonly received form on coins and monuments. The inscription too was placed over his head, which would seem to imply that the upright extended above the transverse bar. The church soon learned to look upon the cross as an emblem no longer of disgrace but of victory, and it became the chosen symbol of Christianity. About the beginning of the 2d century a particular efficacy began to be ascribed to it, and it was regarded with a kind of veneration. Its image was to be seen everywhere in Christian communities, fashioned in wood, stone, and metal; it was placed on tombs, altars, and religious structures, and sometimes on the front of dwellings; and the faithful, not content with beholding its visible form, marked it with the finger on their persons, the sign of the cross being introduced into the ritual and used in baptism, in confirmation especially, and the Lord's supper. In the Roman catacombs have been found many interesting examples of this early use among Christians of symbolical crosses, some dating from the 2d century. They are frequently accompanied by other sacred emblems, such as the dove, the serpent, the circle typical of eternity, the anchor, the alpha and omega, and the fish. The latter derived its significance from the fact that the letters of the Greek word for fish (ΙΧΘΥΣ), are the initial letters of Ἰησοῦς Χριστός Θεόν Υἱός Σωτήρ, "Jesus Christ, Son of God, Saviour." The cross was also frequently interwoven with the Greek X and P (☧), the first two letters of ΧΡΙΣΤΟΣ, thus forming a monogram of our Lord's name or, according to De' Rossi, another monogram, ⛧, composed of I and X, Ἰησοῦς Χριστός. Constantine the Great, to whom when marching against Maxentius a flaming cross is said to have appeared in the heavens, adopted the sign of salvation, and from his time the symbol, once accursed in Roman eyes, glittered on the shields and standards of the imperial armies.—In the Roman church the cross is endued with much significance. The pope has the sacred symbol borne before him everywhere; patriarchs anywhere out of Rome; primates, metropolitans, and those who have a right to the pallium, throughout their respective jurisdictions. The papal cross, carried only before the pope, has three bars, signifying, like his triple crown, his ecclesiastical, civil, and judicial supremacy; the patriarchal cross has two bars, the second being perhaps only an exaggeration of the inscription placed over our Lord's head; the archbishop's cross has but one bar. The cross worn by the crusaders was originally red, but various colors were eventually adopted by different nations. The festival called the "invention of the cross," instituted in honor of the finding of the cross in 326 by the empress Helena, the mother of Constantine, is celebrated on the 3d of May. The story of the discovery is related by Socrates, Sozomen, Rufinus, Theodoret, Paulinus, Sulpicius Severus, St. Cyril of Jerusalem, and Chrysostom; but Eusebius is silent regarding it. When Helena visited the scenes about Jerusalem, it is said that every trace of the great events which hallowed the environs had been obliterated by the heathen, and a temple of Venus stood upon Mount Calvary; but a Jew, who had treasured up what traditions he could gather, pointed out the probable place of Christ's sepulchre. The spot being excavated, three crosses were discovered, and the title which that of Jesus bore was found lying by itself. It is related that the cross of Christ was distinguished from the other two by miraculous cures wrought by touching it. A church was built over the spot and a part of the sacred relic was deposited in it; a part was sent to Rome and placed in the church of Santa Croce in Gerusalemme, built to receive it; and the rest was put by Constantine into the head of a statue of himself in Constantinople. The first was carried away by Chosroes, king of Persia, in 614, but was afterward recovered by the emperor Heraclius, who restored it to its former place in 629. In the time of the crusades it was borne to battle by the Christians, and was captured by Saladin in 1187, in his great victory near Tiberias. What is asserted to be a piece of the true cross is still shown at Rome; another was preserved in Poland till the 17th century, when it was presented by John Casimir to the princess palatine Anna Gonzaga, who bequeathed it to the monks of St. Germain in Paris; and innumerable small reputed fragments are held by Catholics throughout the world. The feast of the "exaltation of the cross," kept Sept. 14, is in commemoration of its restoration by Heraclius; according to other authorities, it was instituted in the Greek church in honor of its appearance to Constantine. The ceremony of the "adoration (or more properly kissing) of the cross," which takes place in Catholic churches on Good Friday, consists in presenting the feet of a crucifix to the lips of the people.—Architectural crosses were of several kinds, the principal being boundary, market, preaching, and memorial crosses. The first defined civil and ecclesiastical limits, and were sometimes endowed with the privilege of sanctuary. Market crosses were built partly to afford shelter in wet weather, and partly in token of the rights of neighboring monasteries to which belonged the tolls of the market. They are still to be seen in many parts of England. At preaching crosses sermons were delivered and proclamations read. Memorial crosses marked the scenes of battles, murders, and other events. In Alpine regions they denote the most dangerous parts of the mountain roads. Fifteen beautiful memorial crosses were built by Edward I. at the places where the body of his queen,

Eleanor, rested during its removal from Grantham to Westminster. Of the few of these that remain, the Gothic cross at Waltham, which has been restored and carefully pre-



Waltham Cross, restored.

served, is the most famous. The principal temples of India, those at Benares and Muttra, are cruciform, and some of the druidical monuments take the same shape.—The cross is used extensively as a charge in heraldry. Berry, in his "Encyclopædia of Heraldry," enumerates 385 different varieties.

CROSS, an E. county of Arkansas, intersected by the St. Francis river; area, about 625 sq. m.; pop. in 1870, 3,915, of whom 1,289 were colored. It was formed in 1862 from portions of Crittenden, Poinsett, and St. Francis counties. The surface is level, and portions are swampy, but the rest is generally fertile. The chief productions in 1870 were 77,408 bushels of Indian corn, 3,971 of oats, 2,235 of Irish and 6,461 of sweet potatoes, and 1,719 bales of cotton. There were 763 horses, 1,108 milch cows, 1,967 other cattle, and 6,330 swine. Capital, Wittsburg.

CROSSBILL, a bird belonging to the order *passeres*, tribe *conirostres*, family *fringillidæ*, and genus *loxia* (Linn.) or *curvirostrata* (Geoff.). The bill in this genus is moderate, broad at the base, with the culmen much curved, and the sides compressed to the very acute tip; the mandibles cross each other, having their lateral margins bent inward; the wings are moderate, the tail short and emarginated; the tarsi short, robust, and feathered below the knee; toes short, hind one with its claw very long; claws curved and sharp. These birds are found in the northern parts of both hemispheres, occurring in flocks in the forests of pines and



American Crossbill (Curvirostrata Americana).

firs, the seeds of which they eat; by means of the powerful bill and its peculiar construction, they pry asunder the scales of the cones; they also do much mischief in orchards by tearing open apples and pears in order to get the pips. The European species is the *L. curvirostra* (Linn.) The American crossbill is the *C. Americana* (Wils.). The length of the latter is 7 inches, and extent of wings 10 inches; the bill is brown, lighter on the edges, darker at the tip; iris hazel; general color a dull light red, inclining to vermilion, darker on the



White-winged Crossbill (Curvirostrata leucoptera).

wings; quills and tail brownish black; the abdomen paler red, passing into whitish. The young males have tints of yellow and green, mixed with brown; in the female the upper

parts are grayish brown, tinged with green, and the rump grayish yellow, as are also the lower parts. They are found in Maine and Canada even in midwinter, and on the shores of Lake Superior are seen in large flocks in the coldest weather, about the mining locations; they are also met with as far south as Pennsylvania. They fly quickly in an undulating manner, making considerable noise; they are easily domesticated, and in their wild state seem not to fear man. The eggs are four or five, of a greenish white color, thickly covered, especially at the large end, with dark brown spots. The white-winged species (*C. leucoptera*, Wils.) also inhabits the northern pine and spruce forests, the whole breadth of the continent, probably up to 68° N., where the woods terminate; it only resorts to temperate climates when forced by severe weather. The principal difference consists in the more slender bill, and in two white bands on the wings, formed by the secondary and first row of small coverts; the habits of the two species are the same. The singular form of the bill in this genus is a striking example of the adaptation of means to ends, which everywhere meets the student of natural history.

CROSSBOW. See Archery.

CROSSE, Andrew, an English electrician, born in Bromfield, Somersetshire, June 17, 1784, died July 6, 1855. He was matriculated at Brazenose college, Oxford, in 1802; but the habits of his fellow students seem to have been particularly unsuited to him, and in 1805 he returned to settle on his estate of Fyne Court, which he had five years previously inherited from his father, and where he passed the greater part of his life. Having a strong predilection for the study of electricity, he provided himself with the necessary apparatus, and pursued his experiments without regard to theories. One of his first discoveries was the production of crystals by the effect of electricity. By the action of the voltaic battery, excited by water alone, upon a tumbler of water taken from a cavern in the neighborhood lined with aragonite crystallizations, he procured in a few days crystals of carbonate of lime. For 30 years he prosecuted these experiments, and succeeded in obtaining 41 mineral crystals, or minerals uncrystallized, in the form in which they are produced by nature, including one, subsulphate of copper, entirely new, being neither found in nature nor previously formed by art. He was of the opinion that it was possible to form diamonds in this way. As he worked alone and never published the results of his discoveries, they were unknown to the scientific world until the meeting of the British association for the advancement of science in Bristol in 1836, when he was induced to explain them publicly. The announcement excited unusual interest, and Mr. Crosse was complimented by eminent scientific men. For many years he had been in the habit of employing the electrical fluid for ascertaining the state of the atmosphere and for other purposes, and had constructed a mile or more of insulated wire above the tree tops in the neighborhood of his house to aid his experiments. In 1816 he predicted "that by means of electrical agency we shall be able to communicate our thoughts instantaneously with the uttermost ends of the earth," although it does not appear that he ever attempted to fulfil his prediction. The discovery, however, with which his name is chiefly connected, is that of the apparent production of insects by the action of the voltaic battery upon certain chemical fluids. In 1836, while pursuing his experiments in crystallization with a highly caustic solution, out of contact with atmospheric air, he noticed the appearance of an insect of the *acarus* tribe, of which upward of 100 more were discovered within a few weeks. The discovery caused a considerable sensation, and although Mr. Faraday and Mr. Weeks amply confirmed the statements of Mr. Crosse by their own experience, the latter was accused of the impiety of assuming to become a creator. Crosse was much affected by these imputations, although he could give no explanation of the manner in which the insects were produced. Subsequent experiments on the same subject by Prof. Schulze of Germany failed to obtain the appearance of insects or animal germs, thus confirming the probability, which Mr. Crosse never disputed, that the ova of the insects were derived from the atmosphere, or conveyed into the apparatus by some natural means unknown to the experimenter. Among the practical benefits of his experiments was the discovery of a process for purifying salt water by means of electricity. He also made some curious discoveries on the effects of positive and negative electricity upon vegetation. A memoir, including his original poems, was published after his death by his widow.

CROSS KEYS, a place in Rockingham co., Virginia, near the forks of the Shenandoah, where a battle was fought, June 8, 1862, between the confederates under Ewell and a Union force under Fremont. Early in the spring of 1862 the bulk of the confederate forces withdrew from northern Virginia to the peninsula; but Jackson and Ewell, with about 12,000, were left behind on the Rappahannock and the Shenandoah. This force, subsequently increased to 15,000 or more, was united under Jackson in the valley of the Shenandoah. Jackson, having been worsted at Kernstown, near Winchester, March 23, retreated up the Shenandoah, but in the latter part of May suddenly swept down the valley, cut off Kenly's detachment at Front Royal, and drove Banks before him to the banks of the Potomac. Threatened by a combined movement of the troops under Fremont, McDowell, and Shields, intended to intercept him, he again retreated up the valley, and was followed by Fremont and Shields, on opposite sides of the river. They expected to unite at Port Republic, near the forks. Ewell was left behind at Cross

Keys to hold Fremont in check, while Jackson pushed forward to Port Republic to meet Shields. Fremont, who had about 18,000, opened an artillery fire upon Ewell, whose force was about 8,000. Ewell held his ground all day, and at night moved on to rejoin Jackson. The two divisions crossed the Shenandoah at Port Republic the next morning, and encountered the advance of Shields's corps, 3,000 strong, which was soon driven back. Fremont had followed Ewell as far as the river, but made no attempt to cross. Jackson's whole command then moved leisurely up the south fork of the Shenandoah, without being further pursued. The action at Cross Keys closed Jackson's brilliant campaign on the Potomac and Shenandoah. With a force never exceeding 20,000, he had for months foiled or held in check the corps commanded by McDowell, Fremont, Banks, and Shields, numbering in all nearly 70,000. The confederate loss at Cross Keys and Port Republic was 133 killed and 929 wounded; the Union loss was about the same.

CROSWELL, Edwin, an American journalist and politician, born at Catskill, N. Y., May 29, 1797, died in Princeton, N. J., June 13, 1871. After acting for some time as assistant editor of the "Catskill Recorder," a journal established in 1790 by his father and uncles, he succeeded Judge Cantine in 1823 as editor of the "Albany Argus," which he converted from a semi-weekly into a daily journal, making it one of the chief organs of the democratic party. He was also state printer till 1840, and again from 1844 to 1847. He continued to conduct the "Argus" till 1854, when he retired from journalism and politics to engage in managing a line of ocean steamers. His ability and his influence were universally recognized.

CROSWELL, Harry, D. D., an American journalist and clergyman, uncle of the preceding, born at West Hartford, Conn., June 16, 1778, died in New Haven, March 13, 1858. He was first publicly known as the editor of the "Balance," a journal founded by him in 1802 at Hudson, N. Y. Mr. Croswell, who was a federalist, wrote in the then prevailing spirit of bitterness, and became involved in many libel suits and prosecutions, celebrated at the time. In one of these, for an article on Jefferson published in the "Wasp," a journal under his direction, Alexander Hamilton made his last forensic effort in his defence. Mr. Croswell afterward removed to Albany, and established a federal paper; but turning his attention to theology, he retired from journalism and took orders in the Episcopal church May 8, 1814. He became rector of Trinity church, New Haven, Feb. 22, 1816, and was in the latter part of his life almost as remarkable for the dignity and gravity of his deportment as he had been in his earlier career for its impetuosity. He published several devotional works.

CROTCH, William, an English composer, born at Norwich in 1775, died at Taunton, Dec. 29, 1847. When scarcely two years of age he could play tunes on the harpsichord, and a year later was able to add a bass. The acuteness and delicacy of his ear were perhaps never surpassed. He readily named any note struck upon the piano without seeing it, and told in what key any one was playing. This precocity attracted the attention of Dr. Burney and other distinguished musicians, but the expectations excited by it were never fulfilled. Crotch became an accomplished musician, but his compositions, of which he published a great number, have no special merit. He was made a doctor of music by the university of Oxford, in which he was also professor of music.

CROTON, a river of New York, rising in Dutchess county, flows through Putnam and Westchester counties, and enters the Hudson river about 25 m. above New York city. It supplies that city with water through the Croton aqueduct. (See AQUEDUCT.)

CROTONA, or **Croton,** an ancient Greek colony and city of southern Italy, near the mouth of the river Æsarus, on the E. coast of the Bruttian peninsula. It was founded by a body of Achæans and Spartans, probably about 710 B. C., and soon became distinguished for size, wealth, and power. According to Livy, its walls enclosed a space 12 m. in circumference. In the war with Sybaris, 510 B. C., Crotona is said to have sent into the field 100,000 men, and to have conquered a Sybarite force of 300,000 and destroyed their town. Some time afterward (according to others at an earlier period) the Crotonians were themselves defeated by the Locrians and Rhegians near the river Sagras. Their national decline was rapid. In the second Punic war they were no longer able to defend their own walls, and a few years later a Roman colony was sent out to recruit the exhausted population of the city. Crotona was celebrated in ancient times as the seat of the school of Pythagoras.

CROTON OIL, a medicinal oil expressed from the seeds of the *croton tiglium*, a plant of the order *euphorbiaceæ*, and a native of Ceylon, Molucca, Hindostan, and other parts of Asia. These seeds are rather larger than a common pea, of an ovate form, and of a brownish color. The kernels contain about 50 per cent. of oil, which is of a yellow color, varying in shade. It has a slight odor, and a bitter, burning taste. It is a speedy and powerful purgative, in the dose of one or two drops. In larger quantities it produces vomiting and great pain, and is sometimes fatal in its effects. It has been long used in India, and was known in Europe as early as 1630, but attracted little notice. An acrid principle may be extracted from it by frequent shaking with alcohol, a bland oil being left behind. This, however, redevelops the acrid principle upon being combined with an alkali. On account of the smallness of the dose and the promptness of its action, it is sometimes employed where other medicines would be difficult of administration, especially

in the case of patients who are in a comatose state. Externally applied, it produces inflammation of the skin and a pustular eruption sufficiently resembling that of smallpox to deceive



Croton tiglium.

a careless or inexperienced observer. It is sometimes used as a counter-irritant.—A pseudo croton oil has been obtained from the seeds of *jatropha curcas*, *curcas purgans*, or the physic-nut tree, and also from *croton pavana*.

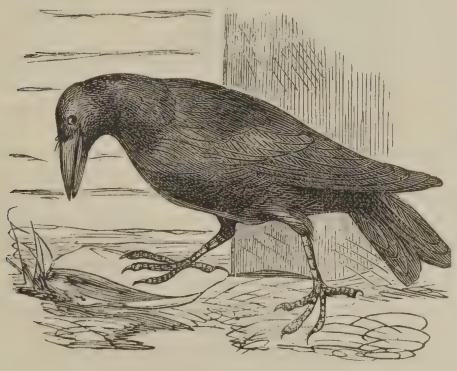
CROUP. Under this name a medical writer in Scotland, Dr. Francis Home, in 1765, described an affection in children of the windpipe or the upper portion of the air tubes (larynx and trachea), involving liability to death from suffocation, and characterized by a peculiar ringing, metallic cough. He applied also to the affection the classical name *suffocatio stridula;* and the term *cynanche trachealis* has been used by writers in the same sense. The name croup has been in popular use ever since the date of Home's writings, and employed also by physicians, to denote diseases in the windpipe giving rise to more or less suffocation, together with the peculiar cough just referred to. "The hives" is a popular term formerly much in vogue in this country, having the same meaning. Writers, however, who came after Home, pointed out the fact that suffocative symptoms, accompanied by the croupal cough, occur in connection with different forms of disease in the same situation. The late Prof. John Ware of Boston was the first to indicate clearly the different affections embraced under the name croup. They are as follows: 1. A spasmodic affection of certain muscles of the windpipe (larynx), occurring independently of inflammation. This affection has been distinguished as spasmodic croup. Its distinctive features are a sudden attack, generally at night, suffocation apparently being imminent, and the peculiar cough very strikingly marked. This affection, though from the violence of the symptoms apt to occasion great alarm, is devoid of danger. After a period varying from a few minutes to several hours, complete relief is obtained, no symptoms of disease within the windpipe remaining. A frequent cause of the attack is indigestion. 2. An affection which, in like manner, involves spasm, the symptoms of suffocation together with the cough being wholly due to the spasmodic condition; but, in addition, there is a slight or subacute inflammation of the membrane lining the larynx and trachea. The inflammation does not invest the attack with any danger. Relief is obtained, but a little cough remains, with perhaps some hoarseness. Prof. Ware distinguished this affection as catarrhal croup. 3. An acute inflammation of the membrane lining the windpipe, the proper nosological name for which is acute laryngitis. The inflammation is essentially the same as in the ordinary acute inflammatory affections of the mucous membrane in other situations, and, by way of distinction from the unusual variety to be presently noticed, it may be called simple acute laryngitis. The swelling of the membrane gives rise to more or less obstruction to the passage of the air in breathing; but spasm is also an element in this form of disease, causing paroxysms of increased difficulty in breathing, accompanied by croupal cough. Simple acute laryngitis in children proves fatal in only a small proportion of cases. It is less serious in the child than in the adult, owing to the fact that in the latter it is apt to give rise to serous effusion beneath the mucous membrane, the obstruction, and consequent danger of suffocation, being thereby increased. Prof. Ware distinguished this form as inflammatory croup. 4. The form to which *par excellence* the name croup is applied, which it is customary to call "true croup," and the three other affections different varieties of "false croup." In true croup the mucous membrane lining the larynx and trachea is inflamed. The disease is therefore laryngitis; but the inflammation has a striking peculiarity which distinguishes it from a simple acute laryngitis, viz.: an exudation, that is, an effusion of fibrine which coagulates upon the mucous surface and forms a layer like a membrane, called a false membrane. The presence of this false membrane is a cause of obstruction in addition to the swelling of the mucous membrane; hence the greater persistent difficulty in breathing and danger from suffocation in true croup, as compared with the three varieties of false croup. The disease proves fatal in a very large proportion of cases, and the suffering from the want of breath is very great. In distinction from simple acute laryngitis, the affection is called by a variety of names, such as membranous or pseudo-membranous, fibrinous, plastic, exudative, and diphtheritic laryngitis or croup. The production of an analogous false membrane is the distinctive characteristic of the disease now known as diphtheria. (See Diphtheria.) Diphtheritic laryngitis is de-

veloped gradually. The first local symptom is hoarseness, which may exist for one, two, or three days before distress from obstruction ensues. The latter at length becomes marked, and progressively increases, the labor of breathing and the suffering from a sense of the want of air increasing in proportion. The voice becomes extinct. The cough is croupal, but in a degree less than in the so-called spasmodic croup. Spasm, however, is an element in true croup, as it is in the several varieties of false croup, but not to the same extent. Death takes place from slow suffocation, or apnœa, in from four to six days. In the cases which end in recovery, the false membrane is thrown off and expectorated. Portions of the membrane are sometimes expectorated in fatal cases, but a renewal of exudation takes place. The exudation sometimes extends to the bronchial tubes, and this lessens the few chances of recovery. Pneumonia not infrequently occurs as a complication. The suffering from the sense of suffocation generally becomes less toward the close of life, owing to the perceptions having become blunted, and the spasmodic element being less marked. Sometimes, owing to these causes, there is an appearance of improvement which is apt to lead to a delusive hope that the patient is essentially better.—In treating cases of true croup, the great object is to expedite the separation of the false membrane. The inhalation of warm vapor or steam is the most effective measure for this object. The presence of lime is supposed to be useful by giving to the vapor a solvent property. Slacking lime in the room is a convenient method of producing a warm vapor, and securing whatever benefit is to be derived from the presence of lime in the vapor inhaled. In addition, the room should be kept filled with vapor from boiling water, and the temperature should be between 80° and 90°. Emetics may be useful when the false membrane has been thrown off, by effecting its expulsion from the larynx. The application of cold to the neck is recommended, with a view to lessen the intensity of the inflammation and prevent spasm. A highly important part of the treatment consists in giving nutritious food, together with tonic remedies and perhaps alcoholic stimulants, in order to prolong life until the separation and removal of the false membrane have been effected. The measures of treatment which were formerly in vogue, bleeding, mercurialization, counter-irritation, and the frequent repetition of powerful emetics, are now generally regarded by physicians as injudicious. Opening the trachea (tracheotomy) is to be employed when it is apparent that the disease will otherwise in all probability prove fatal. The chances of saving life by means of this operation are not many; but it cannot be doubted that tracheotomy sometimes rescues patients from impending death. If not successful, it affords relief from the distress of suffocation, and substitutes an easier mode of dying; it is therefore justifiable on the ground of euthanasia. True croup, as a rule, affects children between two and seven years of age. Exceptionally it occurs at other periods of childhood and after adult age. The varieties of false croup in which spasm is exclusively the cause of the temporary obstruction of breathing call for measures of treatment which relieve the spasmodic condition, namely, warm applications to the throat, the inhalation of warm vapor, and anodynes. When dependent on indigestion, a mild emetic is promptly efficacious. Simple acute laryngitis in the child claims mild measures designed to diminish the intensity and duration of the inflammation, together with remedies to palliate spasm.—None of the varieties of false croup have any tendency to eventuate in the membranous variety or true croup. Considering this fact, and the great danger in cases of true croup, it is extremely important to discriminate between these different affections, which have unfortunately been grouped together. Anxiety on this score may often be relieved by bearing in mind that if the voice or the cry be unaffected, that is, if there be no hoarseness, the affection is purely spasmodic, and without danger. It is also important to be borne in mind that the dangerous affection, true croup, is generally developed gradually; and in a child, especially between two and seven years of age, hoarseness should always excite apprehension, and still more if with the act of inspiration the nostrils dilate, although there may be no evidence of distress from obstructed breathing.—An affection analogous to spasmodic croup, consisting in spasm of those muscles of the larynx which close the glottis, occurring chiefly in infants, is known as spasm of the glottis or *laryngismus stridulus*. It has been called thymic asthma, from a fancied dependence on enlargement of the thymus gland. It occurs in paroxysms, during which respiration is greatly obstructed. Sometimes, although very rarely, it causes death by suffocation. It exists in a mild form when infants are said to have "spells of holding the breath." The holding of the breath, however, is due not to mental perverseness, but to an involuntary contraction of the muscles of the glottis. A tendency to spasm of these muscles exists in some children as an idiosyncrasy. Severe paroxysms are apt to arise from the irritation of teething. The milder paroxysms are quickly made to cease by a sudden impression on the nervous system, as by slapping the back, or sprinkling a little cold water on the face. If the paroxysms are severe, it is important to ascertain and remove the exciting causes (for example, dividing the gums), and to employ measures to improve the general health and vigor. Spasm of the glottis, although one of the affections belonging espepecially to infancy, may occur at any period of life. It is among the varied nervous manifestations embraced under the name hysteria, and it may be caused by a tumor so situated

as to irritate the nerve which furnishes fibres to the muscles of the glottis, namely, the recurrent laryngeal nerve.

CROUSAZ, Jean Pierre de, a Swiss philosopher and mathematician, born in Lausanne in 1663, died in 1748 or 1750. He studied at Geneva, Leyden, and Paris, and was ordained pastor of a church at Lausanne. In 1699 he was appointed professor of Greek and philosophy in his native city; in 1724, professor of mathematics and philosophy in Groningen; and in 1737, professor of the same in Lausanne. Besides his sermons, he published many works on logic, education, and philosophy, and also on higher geometry.

CROW (*corvus*), a genus of birds belonging to the order *passeres*, tribe *conirostres*, and family *corvidæ*. More than 20 species are described, found in most parts of the globe; some remain stationary within a certain district, while others migrate from place to place with the changes of the seasons; they generally assemble in flocks in cultivated places, in search of worms, grubs, caterpillars, small animals, the eggs and young of birds, carrion, and various grains and cultivated vegetables; a few species frequent the seashore, to feed upon the dead fish cast up by the waves, or in quest of shell fish, which they break by letting them fall from a considerable height upon the rocks. The old genus *corvus* includes the raven, the rook, the jackdaw, and other species not usually denominated crows, which will be noticed under their proper heads. Four species only will be described here, viz.: the American, the European, the hooded, and the fish crow. I. The American crow (*C. Americanus*, Aud.) was



American Crow (Corvus Americanus).

first separated from the European species by Audubon, and there can be little doubt that they are distinct. The bill of the adult is $2\frac{1}{6}$ in. along the ridge, black, straight, strong, and compressed; the upper mandible a little convex, the lower mandible straight; the edges of both sharp and inflected. The nostrils are basal, lateral, round, and covered by bristly feathers directed forward. The head is large, and the whole form of the bird compact and graceful; the legs are strong and of moderate length; the tarsi are $2\frac{1}{2}$ in. long, black, and covered with scales anteriorly; the toes and claws are black, the latter being moderate, arched, compressed, and sharp; the third toe is the longest, the other three being nearly equal. The plumage is of a general deep black color, with purplish blue reflections, and tinged with purplish brown on the back of the neck; the under parts are less glossy, and the feathers are less compact than those of the back; the plumage of the head and neck is well blended; the wings are long, the first primary short, and the fourth the longest; the primaries are tapering, and the secondaries broad; the tail is long, rounded, of 12 feathers with their shafts undulated. The length of this crow is 18 in., and the extent of wings 3 ft. 2 in. The iris is brown. The female is slightly less glossy than the male, and the young are of a dull brownish black, with less brilliant reflections. Probably no bird is more generally and unjustly persecuted than the crow; every farmer thinks himself privileged to destroy it, and counts the death of every one a gain to agriculture. Of course the bird, in order to save his race from extermination, must employ all his cunning and ingenuity to avoid his enemies; hence his extreme shyness, and certain flight at the sight of any one armed with a gun, the destructive properties of which he seems well acquainted with; perched on a high tree, he sounds the alarm at the approach of danger, and all the crows within half a mile fly off at the well known cry of the watchman. Thousands of crows are destroyed every year by guns, traps, and poisoned grain; and the young birds are killed in their nests by every urchin who can climb a tree. Though the crow pulls up a few seeds of the germinating corn, his services to the agriculturist far outweigh his depredations; he daily devours insects, grubs, and worms, which but for him would devastate whole fields of the young corn; he destroys innumerable mice, moles, and other small quadrupeds, every one of which commits ten times the mischief he does; he will eat snakes, frogs, lizards, and other small reptiles, and also fruits, seeds, and vegetables, and, if hard pressed for food, will even descend to carrion. He will steal and devour the eggs of other birds, and will occasionally prey upon a weak or wounded bird; he delights to worry the owl, the opossum, and the raccoon, and will pursue the thievish hawk, and even the eagle, with all the forces that he can raise in the neighborhood; he is said to follow the larger carnivora, probably to partake of the bits which they may leave. On the whole, the crow is a persecuted, comparatively harmless, and indeed most serviceable bird. Audubon says to the farmers: "I would tell them that if they persist in killing crows, the best season for doing so is when their corn begins to ripen." Wherever the crow is abundant the raven is scarce, and *vice versa*. The crow is

common to all parts of the United States, assembling after the breeding season in large flocks, many of which remove to the southern states in winter. It builds its nests in thick swamps, or on the sides of steep rocks, as much concealed as possible; the period of breeding varies from February to June, according to latitude. The nest is made of sticks interwoven with grasses, plastered within with mud, and lined with soft roots, feathers, or wool; the eggs are four to six, of a pale greenish color, spotted and clouded with brownish green and purplish gray; both sexes sit upon the eggs, and watch over their young with the tenderest care; in the southern states they raise two broods in a season. Several nests are often found near each other, and when any stranger approaches the community, the noise of the assembled multitude is almost deafening until the intruder retires. The young, when about to leave the nest, are considered in some localities tolerable food. The flight of the crow is swift, capable of being sustained a long time, and sometimes at a great height; on the ground its gait is graceful and slow; it often alights on the back of cattle, to pick out the worms from the skin. Their well known notes, "caw, caw, caw," are very discordant, especially in early morning when they scatter into small flocks in search of food, and toward evening when the returning parties are selecting their roosting places for the night. The crow is very courageous against its bird enemies, and will not hesitate to attack any marauding hawk. It makes a very interesting pet, as it displays considerable intelligence and docility; but its propensities are decidedly thievish. Like many other birds of a black color, the crow is occasionally perfectly white. The sight of the crow is very keen; and by this sense, and not by the sense of smell, it is guided in its search of food, and in the avoidance of its human enemies. When on excursions after eggs, which it carries away on the bill, it is often attacked and driven away, especially by the courageous king-bird. II. The European or carrion crow (*C. corone*, Linn.) is larger than the preceding species, being from 20 to 22 in. long, with an extent of wing of 40 in.; the bill is stronger, deeper, more convex on the sides, and the edges more inflected; the feet and toes are larger and stronger, and the claws robust in proportion. Were it not for its smaller size and some differences in the form of the feathers, it might be confounded with the raven, as its proportions are about the same, the body being full and ovate, and the neck short and strong. The palate is flat and the tongue oblong, while in the American species the palate is concave and the tongue narrower. The plumage is moderately full, compact, and very glossy; the feathers of the hind neck are narrow, with their points distinct, but in the American bird they are broad, rounded, and so blended that the form of each is not easily traced; the feathers of the fore neck are lanceolate and compact at the end, as in the raven, but in the American crow they are three times as broad, rounded, and entirely blended; in other respects the plumage is alike in the two birds, the neck of the former being tinged with green and blue, but in the latter with a distinct purplish brown. From this description it can hardly be doubted that the American and the European crow are distinct species. The female is similar to the male in color, but somewhat smaller; the tints of the young have less of the metallic lustre. The carrion crow preys upon small quadrupeds, young hares and rabbits, young birds, eggs, crustacea, mollusks, worms, grubs, and grains; but, as its name imports, its favorite food is carrion of all kinds; it often destroys young lambs and sickly sheep; it is very fond of attacking parturient ewes, frequently killing both the mother and the young, tearing out the eyes, tongue, and entrails, in the manner of the vultures. Whatever its food may be, it is exceedingly voracious. Unlike the American species, the carrion crow does not associate in large flocks, but is generally solitary or in pairs, except in breeding time, when a whole family will remain together for some weeks. Its flight is sedate and direct (hence the expression, "as the crow flies," for a straight line), and performed by regular flaps of the fully extended wings; it does not soar to any great height, and prefers the open moors, fields, and shores to mountainous districts. Its gait is similar to that of the raven, and its cry is a croak quite different from the bark-like cawing of the American crow. It builds its large nest amid high rocks or on tall trees, and lays from four to six eggs of a pale bluish green color, spotted and blotched with dark brown and purplish gray; these colors, however, vary considerably; the eggs are about $1\frac{3}{4}$ in. long, and $1\frac{1}{8}$ in. in their greatest width. They not unfrequently build in the neighborhood of farm houses, in order to be near any rejected offal, and watch their opportunity to pounce upon chickens or ducklings, and to steal eggs from any of the domestic fowls. The carrion crow is very easily tamed, and is capable of strong attachment; its docility is great, and its memory astonishing; its propensities are thievish; like the raven and the jackdaw, the carrion crow may be taught to imitate the human voice. According to Temminck, this species occurs over all western Europe, but is rare in the eastern parts. III. The hooded crow (*C. cornix*, Linn.) has the head, fore neck, wings, and tail black, with purplish blue and green reflections; the rest of the plumage is ash-gray tinged with purplish, the shafts being darker; the female is similar to the male, somewhat smaller, the black on the fore neck less in extent, and the gray of the back less pure; the plumage of the young is black, with the exception of a broad band of dusky gray round the fore part of the body. This species, except in color, much resembles the carrion crow; it is somewhat

smaller, the length being about 20 in. and the extent of wings 39 in. It is abundant in the northern parts of Scotland, and it occurs in all parts of Europe; it prefers the coast, and the neighborhood of large maritime towns. Not more than five individuals are often seen together; it is quite as omnivorous as the preceding species, though it prefers fish and mollusks to the carcasses of larger animals; it has sagacity enough, when it cannot open crabs and shellfish, to raise them into the air and drop them on the ground for the purpose of breaking them. It is very fond of perching upon a stone or tree in dull weather, and croaking for a long time, being answered by others that have stationed themselves at a distance; this habit has been considered as indicative of rain. Its ordinary flight is slow and regular, and its gait upon the ground remarkably sedate and dignified. It is a peaceable bird, and is rarely attacked. It does not soar, nor skim the hill-



Hooded Crow (Corvus cornix).

sides in search of food, but skulks along the low grounds in the vicinity of water; it destroys many of the eggs and young of the plover and the red grouse and other birds frequenting the moors. They remain paired the greater part of the year, and almost always construct their nest on a rock near the sea; the eggs, usually five, are of a pale bluish green tint, marked, especially at the large end, with roundish spots of greenish brown and pale purplish gray. The hooded crow is generally found in different localities from the carrion crow; and, when existing in the same district, the species keep separate, the latter being much more shy and wild. It is said, and probably with truth, that the species breed together, producing hybrids. It must be difficult to distinguish such hybrids from the present species, as the space occupied by the ash-gray varies greatly in different individuals. IV. The fish crow (*C. ossifragus*, Wils.) is smaller than the common crow, having a length of only 16 in. and an extent of wings of 33 in; the bill is nearly 2 in. and the tarsus $1\frac{3}{4}$ in. long. These two birds resemble each other in general appearance; the bill in the fish crow is concave on the sides at the base, and flat in the middle; the plumage in its general color is deep black, with blue and purple reflections above, and blue and greenish beneath; the bill, tarsi, toes, and claws are black; the iris dark brown. This species is abundant in the southern states, in maritime districts, at all seasons; it is occasionally seen as far north as New York in spring and summer, returning to the south in winter. The fish crow is not persecuted like the common species, and is therefore quite familiar in its habits, approaching houses and gardens without fear, and feeding unmolested on the best fruits. Its favorite food, as its popular name implies, is fish; at early dawn the flock take wing for the seashore, in a very noisy manner; they skim along the shallows, flats, and marshes in search of small fish, which they catch alive in their claws, retiring to a tree or stone to devour them. Like others of the genus, this species will feed on all kinds of garbage, on crabs and mollusks, on eggs and young birds, on the berries of various kinds of *ilex* and *stillingia*, on mulberries, figs, whortleberries, pears, and other ripe fruits; they are in the habit of attacking on the wing the smaller gulls and terns, and of forcing them to give up their recently caught fish. They breed in February and March in Florida and South Carolina, and a month later in New Jersey; the nests are usually made in the loblolly pine, on the ends of the branches about 30 ft. from the ground; the nest and eggs resemble those of the common crow, but are smaller. The note is different from that of the other species, resembling, according to Audubon, the syllables *ha*, *ha*, *hae*, frequently repeated; at night they are still, in the morning very noisy, and in the breeding season not disagreeable nor monotonous. Their flight is strong and protracted; they generally fly near the water, but occasionally rise to a great height. On the ground their movements are graceful; and they are fond of opening and shutting their wings, a habit common to the other crows. They can disgorge their food like the vultures, when wounded and attempting to escape; they are easily approached and shot, and in winter, when their food is chiefly fruit, they are very fat, and considered good eating. The female is smaller, and the gloss on the plumage is less bright, with brown reflections on the upper parts; the length is 15 in. and the extent of wings 31 in.—The habits of the crows seem to be the same in all countries. The carrion crow of Ceylon detects the wounded deer, and discloses its retreat to the hunter by congregating on the neighboring trees. Whenever this bird sees an animal lying on the ground, it soon collects all its comrades in the vicinity; one of the boldest hops upon the animal's body; as this is not uncom-

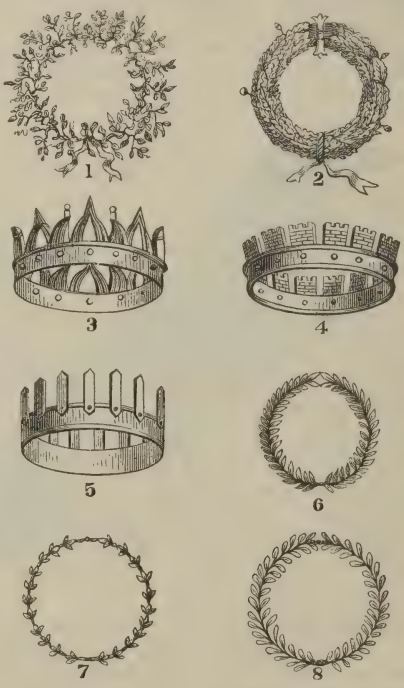
mon in their search for ticks, the creature lies still, grateful for the expected riddance of the vermin. Finally the crow looks into the eyes; then the animal, if able to defend itself, removes the dangerous friend by a shake of the head; but if the eyes be dim from disease or wounds, the crow perceives it, and plunges its powerful bill into the eyeball of the sufferer, and feasts upon its favorite morsel; the rest soon join, and attack the parts giving easiest access to the entrails. The hooded crow of Ceylon, like the other mentioned in Layard's "Ornithology of Ceylon," lives amid the densest populations, stealing everything eatable that comes in his way; if the spread table be left for a moment, the marks of feet upon the cloth and bills in the butter, and the disappearance of small bits, show that the robbers could not have been far off. They are useful scavengers, and are rarely molested by the natives, of whom they stand in no fear; but at the appearance of the white man with his gun, the whole corvine community is in an uproar, and flies hurriedly to a safe distance.

CROW BLACKBIRD. See GRAKLE.

CROWE, Catharine (STEVENS), an English authoress, born at Borough Green, Kent, about 1800. She married in 1822 Lieut. Col. Crowe of the royal army, and began her literary career in 1838 by the publication of a tragedy entitled "Aristodemus." Adopting a more popular style of composition, she soon after published a novel called "Manorial Rights," which was succeeded by the "Adventures of Susan Hopley." The latter was marked especially by a rapid succession of various incidents, and was reproduced in dramatic form. Her third novel, "Lilly Dawson," appeared in 1847, and was designed to show the influence of the affections upon the development of the intellect. In 1848 she translated from the German of Kerner the "Seeress of Prevorst;" and being thus introduced to the study of animal magnetism, she afterward published several tales, some of them of a fantastic character, containing incidents and observations with reference to the supernatural world and to dark points of experience. "The Night Side of Nature" (1848) was a skilful effort to awaken an interest in the whole doctrine of spirits. Among her other publications are "Pippie's Warning," "Light and Darkness, or the Mysteries of Life," "The Adventures of a Beauty," and "Linny Lockwood." Of late years she has been a contributor to periodical literature.

CROWE, Eyre Evans, an English historian, born about 1799, died Feb. 25, 1868. For many years he followed the profession of a journalist in London, writing for the "Morning Chronicle," "Examiner," and "Daily News," chiefly on continental affairs. His principal works are: "Lives of Foreign Statesmen" (1830), "The Greek and the Turk" (1853), "Reigns of Louis XVIII. and Charles X." (1854), and "History of France" (5 vols., 1858–'68).

CROWN (Lat. *corona*), a wreath-shaped or circular covering for the head, made either of leaves and flowers or of metals and precious stones, and worn as a decoration or honorable distinction. The legends of the Greeks attributed its invention to Prometheus or Janus, and the earliest Greek crowns were worn chiefly on festive occasions, and were twined of twigs of the tree or plant sacred to the divinity who presided over the festival. They rarely contained more than a single kind of leaves or flowers, as the ivy, myrtle, roses, violets, or lilies. The ivy was in especial esteem on Bacchanalian occasions, since it was believed to be a preventive of drunkenness. Circular garlands were common ornaments also for priests, altars,



ROMAN CROWNS.—1. Corona obsidionalis. 2. Civic Crown. 3. Naval Crown. 4. Mural Crown. 5. Corona castrensis. 6. Triumphal Crown. 7. Myrtle Crown (corona ovalis). 8. Olive Crown (corona oleagina).

temples, graves, and sacrificial offerings. At the national games, a crown was the reward of the victors. It was made of wild olive for the Olympic heroes; of laurel for the Pythian; of olive, and afterward parsley, for the Nemean; and of pine for the Isthmian. —The Romans gave crowns to the conquerors in the circus, and to the best actor at the theatre. They also invented a great variety of crowns, made of different materials, each with a separate name, which were bestowed in honor especially of military achievements. The *corona obsidionalis* was presented by besieged cities or armies to the general who delivered them; it conferred the highest honor, was rarely ob-

tained, was made of weeds and wild flowers gathered from the spot where the troops or citizens had been beleaguered, and was therefore also called *corona graminea*. The *corona civica* was the reward for a soldier who should save the life of a citizen in battle, by slaying his opponent and maintaining the ground; it was an oak wreath, and was the second of the military crowns in honor. The *corona rostrata* or *navalis* was bestowed upon the Roman who in a naval combat had first boarded the enemy's vessels, or the commander whose skill and courage had gained a signal victory; it was of gold, and decorated with representations of the beaks of ships. The *corona muralis* was given by the general to the soldier who first scaled the wall of a besieged town; it was of gold, and decorated with turrets. The *corona castrensis* was ornamented with palisades, and was given to the soldier who first surmounted the intrenchments and forced an entrance into the enemy's camp. The *corona triumphalis* was a wreath of laurel (afterward of gold), given by the soldiers to the victorious general on the day of his triumph. The *corona ovalis*, of myrtle, and of less estimation than the preceding, was given to generals who enjoyed an ovation instead of a triumph. The *corona oleagina* was a wreath of olive, and was bestowed upon victorious soldiers as well as generals. There was a crown of olive or gold peculiar to the priests, which was also regarded as an emblem of peace; radiate crowns attributed to gods and deified heroes and emperors; and a crown of verbena, worn by brides, by whom it was gathered and braided. The custom of crowning poets with wreaths of flowers existed both among the Greeks and Romans.—The crown under different names, as crown, tiara, mitre, and diadem, has been a badge of civil and ecclesiastical supremacy from remote antiquity. The mitre of the Jewish high priest and the radiate crowns upon coins of ancient Persian kings are examples. The Roman and Byzantine emperors wore crowns of various kinds, the diadem, a sort of fillet, becoming common after the time of Constantine. The imperial crown of Charlemagne, imitated from Byzantine usage, was closed above like a cap, and terminated in a circle of gold. During the middle ages the emperors of Germany received three crowns: that of Germany, which was of silver, and was assumed at Aix-la-Chapelle; the crown of iron, which had formerly been peculiar to the Lombard kings, and was assumed at Pavia; and the imperial crown, which was received at Rome, and was surmounted by a mitre similar to that of bishops, but somewhat smaller. The crown of iron, though chiefly of gold, derived its name from an iron band which encircled it in the interior, and which was said to have been made from one of the nails which served in the crucifixion of Christ. It is still preserved in the cathedral of Monza, and was one of the crowns of the Austrian emperors while they were masters of the Lombardo-Venetian kingdom. Napoleon wore it when he was crowned king of Italy at Milan. The kings of France of the first race wore a diadem of pearls in the form of a fillet; those of the second wore a double row of pearls; those of the third wore a circular band of gold enriched with precious stones. Philip of Valois introduced the three fleurs de lis about 1330. Francis I. returned to the crown of Charlemagne, arched over the head, in order not to leave this mark of superiority to Henry VIII. and Charles V.; and from that time this has continued to be the crown of France.—A fillet of pearls appears from coins to have been the most common crown of the Saxon kings of England. Stephen introduced the open crown with fleur de lis, and Richard III. first placed the arched crown with crosses and fleur de lis upon the great seal. The crown which, with slight variations, has been continued by succeeding sovereigns, was introduced by Henry VII. At present it is a circle of gold, adorned with pearls and precious stones, having alternately four crosses pattée and four fleurs de lis; above these rise four arched diadems, which close under a mound and cross. The whole covers a velvet cap trimmed with ermine. About the 10th century, when the feudal lords disputed the royal supremacy, all the ranks of the nobility assumed a sort of crown. (See CORONET.)—The popes have for many centuries worn a triple crown, which is designed to signify their ecclesiastical, civil, and judicial supremacy. It consists of a long cap or tiara of golden cloth, encircled by three coronets, one rising above the other, surmounted by a mound and cross of gold.

CROWN POINT, a town of Essex co., N. Y., on the W. shore of Lake Champlain, about 90 m. N. of Albany; pop. in 1870, 2,449. It joins the town of Ticonderoga on the south, and is traversed by the S. division of the Whitehall and Plattsburgh railroad. It is principally noted as the site of Fort Frederick, now in ruins, erected by the French in 1731. The fort came into the hands of the British in 1759, and with its garrison of 12 men was taken in May, 1775, by a detachment of Americans under Seth Warner, forming part of the force with which Ethan Allen surprised Fort Ticonderoga.

CROWS, a tribe of American Indians, called by themselves Absaroka or Upsaroka, occupying when first known the basins of the Yellowstone, Big Horn, and Tongue rivers. They belong to the great Dakota family, having separated from the Minetaries or Gros Ventres, but were driven from their territory by the Ogallala Sioux and the Northern Cheyennes. In their turn they pressed on the Flatheads, Blackfeet, and other mountain tribes. They were roughly estimated about 1820 at 3,250. They are divided into three tribes, with as many dialects: the Kikatsa or Crows proper; the Ahnahaways, near the Mandans; and the Allakaweah. A treaty was made with them in

1825, by which they agreed to give passage to traders to New Mexico, and to remain at peace. They joined in 1851 with other Indians in a treaty giving the United States the right to run roads



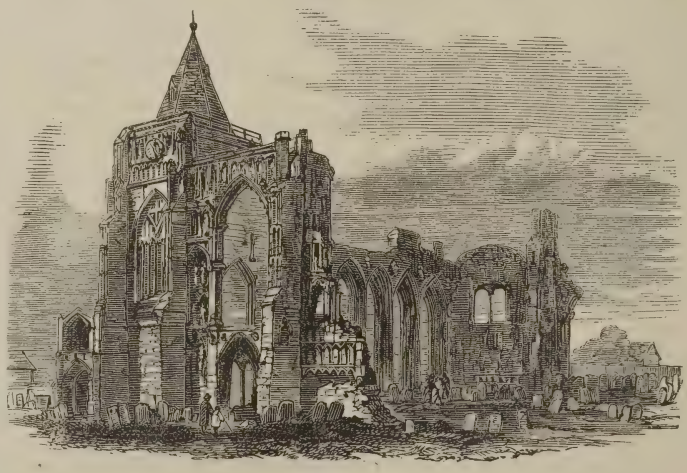
Crow Indians—Chief in Full Dress.

through their territory, and in return were to receive an annuity of $50,000 for 50 years; but the Sioux and Blackfeet often prevented agents from reaching the Crows to pay them. By the treaty of Fort Union in 1866 they gave lands for stations; and by a treaty in 1868 it was attempted to place both the Mountain and River Crows (in all about 3,600) on reservations in Montana. Under these treaties the annual payments in 1872 were about $64,000.— They obtained horses at an early day, and became expert hunters and warriors of the plains. They are tall, well made, and remarkable for the extraordinary length of their hair. Catlin painted a chief whose hair swept the ground as he walked. They dress buffalo skins for lodges and attire till it is perfectly white, and the Crows and their lodges are easily recognized by this clean appearance.

CROW WING, a central county of Minnesota, bounded N. W. by the Mississippi river; area, about 590 sq. m.; pop. in 1870, 200. The Northern Pacific railroad crosses it, and the St. Paul and Pacific railroad is to be extended through the S. W. part. The estimated value of farm productions in 1870 was $6,362; of live stock, $9,075. Capital, Crow Wing.

CROYDON, a market town and parish of Surrey, England, on the London and Brighton railway, 10 m. S. of London; pop. in 1871, 20,325. The houses are mostly well built, and the streets, the main one a mile long, are paved and lighted with gas. It has an elegant and capacious church of freestone, built in the 15th century, two modern churches, several chapels and schools, a hospital, an almshouse richly endowed for the maintenance of 34 decayed housekeepers, a literary and scientific institution, a handsome town hall, a barrack, a jail, breweries, bleacheries, and calico print works. The manor of Croydon (called in the Domesday Book Cruie-dune, chalk hill), together with a royal palace, was given at the Norman conquest to Lanfranc, archbishop of Canterbury, whose successors resided here for a long time. The palace has been gradually rebuilt since 1278, and the oldest portion now left is of the 14th century. In 1780 it was converted into a calico factory, which has since been abandoned. A girls' industrial school is taught in the old chapel. In consequence of the facility of communication between Croydon and the metropolis, it has of late years become the residence of large numbers of persons doing business in London. Many fine dwellings have been added to it, and its population has rapidly increased.

CROYLAND, or **Crowland,** a town of Lincolnshire, England, at the confluence of the Welland



Croyland Abbey.

with two smaller streams, 8 m. N. of Peterborough; pop. in 1871, 2,413. It is a place of much interest to antiquaries, partly for its curious triangular foot bridge, dating from the reign of Edward II., but chiefly on account of the ruins of a famous and magnificent abbey, a portion of which is still used as a church.

This abbey, founded by Ethelbald in 716, was several times destroyed, and rebuilt each time with greater splendor.

CRUCIBLE, a small vessel made of refractory materials for withstanding high temperatures, and used in metallurgic and chemical operations for containing substances to be melted. The name is said to have been given to it by the alchemists, from the Latin *crux, crucis,* in consequence of their custom of marking it with the sign of the cross. Others derive it from the Latin *crucio,* to torment, because the contents, in the language of the same alchemists, were thus treated in the operations to which they were subjected. Crucibles are made in various forms and of different materials, according to the purposes required of them. The qualities they should possess are infusibility, capacity of bearing sudden changes of temperature without breaking, resistance to the chemical action of the substances fused in them, and a texture impermeable to liquids and gases.—The best earthenware or porous crucibles are made of the purest clays, such as consist only of alumina and silica. The texture depends upon the degree to which the materials are pulverized. The close Wedgwood crucibles are made of the best materials finely ground; but they do not withstand sudden changes of temperature so well as the coarser Hessian and English crucibles. The former, which have been long known as the cheapest and among the best clay crucibles, are made in the vicinity of Almerode, Germany, of an aluminous clay, mixed with quartz sand. They are three-sided at top and round below. Their composition, according to Berthier, is silica 70·9, alumina 24·8, oxide of iron 3·3, with traces of magnesia. They are remarkable for withstanding sudden changes and high degrees of temperature. Small ones may even be heated to redness and thrown into cold water without breaking. They will soften, however, at the high heat of the furnaces in which they are used, and the coarseness of their material renders them very porous. Saltpetre and common salt, and other substances used as fluxes, are liable when fused to find their way through them. Porcelain or Wedgwood crucibles are more impervious to vapors and fluxes. The French crucibles of Beaufay are perhaps more refractory than the Hessian. They are made near Namur, of clay without additional mixture of sand; when moulded they are washed over with a thin coating of pure clay, prepared by pulverizing clay that has been baked. They are more dense than other clay crucibles, and hence better resist the passage of fluxes. Their composition is, by the analysis of Berthier, silica 64·6, alumina 34·4, oxide of iron 1. The English or London crucibles are triangular or circular, and have covers of the same material. They are composed of two parts of Stourbridge clay and one of pulverized coke. The Cornish crucibles, made for the assayers of copper ores in Cornwall, have long been celebrated. They are made of Poole and Stourbridge clay, mixed with sand from St. Agnes, and ground pots. An analysis by Dr. Percy gives, in 100 parts, silica 72·29, alumina 25·32, protoxide of iron 1·07, lime 0·38, magnesia a trace, potash 1·14. —Blue pots, or black-lead crucibles, as they are often incorrectly called, are made of the mineral graphite or plumbago, which is composed of carbon with 4 to 10 per cent. of iron. The substance is finely pulverized, mixed with a third or half its weight of clay, moulded into the pots, some of which are large enough to serve for assaying furnaces, and then baked. These are excellent crucibles for resisting changes of temperature, as well as the chemical action of their contents; but their higher cost limits their use. They are used in melting cast steel in the large works where it is manufactured. They may be protected on the inside from the action of the oxides, which tend to remove the carbonaceous material, by a lining of clay or other substance. These are made of excellent quality in Boston and Jersey City.—For different chemical operations crucibles made of various metals are employed. Those of platinum are in continual use in the operations connected with chemical analyses. But these, though they bear the highest temperature, are attacked by many substances which do not affect other metals, as silver particularly, and crucibles of this material are therefore required as occasional substitutes. Cast-iron crucibles are cheaply made, and are very serviceable in many assays of sulphurets especially. The iron itself serves to desulphurize the natural compound of this substance, as the carbon of the brasqued crucibles deoxidizes the oxides. Assays of galena may be rapidly made one after another in cast-iron crucibles, by introducing a portion mixed with twice and a half its weight of carbonate of soda and fusing; the galena is decomposed, and sulphuret of iron is produced at the expense of the crucible; the lead set free may be poured out, and a new portion instantly introduced, and thus the operation may be continued as long as the crucible lasts.

CRUCIFIX (low Lat. *crucifigo,* to fix to a cross), a sculptured or carved representation of the Saviour attached to the cross. The simple cross was the earliest symbol of Christianity. The sixth œcumenical council (680) ordered that Christ should be represented according to his human features, rather than in the symbolical figure of the paschal lamb, and in the succeeding century the crucifix became common throughout the church. Crucifixes are still preserved in a museum in Rome which date from the 8th century. This image is used by few Protestants, but is placed by Roman Catholics in churches and oratories, especially on altars, and is sometimes worn on the person.

CRUCIFIXION, the punishment of death upon the cross. It was in common use among the Egyptians, Assyrians, Persians, Carthaginians, Greeks, Romans, and other nations of antiquity. In Judea it was only exceptionally practised

before the occupation of the country by the Romans. In early times the idea of degradation appears not to have been connected with punishment by crucifixion. Among the Carthaginians it was a common military punishment. When Alexander the Great captured Tyre, he crucified 2,000 of its defenders. Darius crucified 3,000 persons after the siege of Babylon. According to Josephus, Alexander Jannæus put to death on the cross 800 Jews, and Quintilius Varus 2,000. At the sack of Jerusalem under Titus, the Romans seized the fugitives and crucified them until there were no more crosses for the bodies. Among the Romans crucifixion was considered an infamous punishment. It was applied especially to slaves, and if ever to freemen, only to those convicted of the most heinous crimes. The cross was generally erected in some frequented place outside of the city. The criminal was sometimes fastened to it on the ground and raised with it; sometimes he was lifted to it by means of a ladder after it had been planted; and sometimes he was bound or nailed to the cross bar alone, which, separate from the upright, was then elevated by ropes to its place. Ingenuity contrived many different forms of crucifixion and additional torment. In ordinary crucifixions the death was lingering, sometimes not happening in less than three days. In general the body was left to rot on the cross, sepulture being forbidden.—The details of the Saviour's crucifixion have been the occasion of much learned dispute. It is agreed that he was nailed to the cross, but whether with three or with four nails is undecided. Nonnus and Gregory Nazianzen contend that only three were used, but the generally received belief is in favor of four. In the 17th century Cornelius Curtius, an Augustinian friar, wrote a large treatise in support of the latter theory. The painters are probably wrong in representing Christ as bearing the whole of his cross. Generally only the transverse bar was carried, and fastened to the upright after the arrival at the place of execution. (See Cross.)

CRUCIGER, or **Creuziger, Kaspar,** a German Protestant theologian, born at Leipsic in 1504, died at Wittenberg in 1548. He studied at Wittenberg, where he became connected with Luther, by whose favor he was appointed rector of Magdeburg in 1524. In 1528 he became professor of theology and court preacher at Wittenberg, in which offices he remained till his death. His services to the reformation consisted chiefly in aiding Luther to translate the Bible, and in taking part in the most important religious conferences of the time.—His grandson, Georg (1575–1637), was the instructor of Maurice of Hesse, and persuaded that prince to embrace the reformed doctrines. He was afterward professor of philosophy at Marburg, and attended the synod of Dort.

CRUDEN, Alexander, author of the "Concordance" to the Bible, born in Aberdeen, Scotland, May 31, 1701, died in London, Nov. 1, 1770. He was educated at Mareschal college, and intended for the church, but his conduct was marked by eccentricities which were the premonitory symptoms of that insanity with which he was afterward afflicted; and, abandoning his intention of becoming a minister, he went to London in 1724, where he supported himself by giving lessons in Latin and Greek. Afterward he obtained a position as tutor, and resided for some time in the Isle of Man. In 1732 he returned to London, where he was engaged as corrector of the press by a publishing house, with which occupation he combined that of bookseller, opening a small shop under the royal exchange. He had already commenced his "Concordance to the Holy Scriptures," which was completed and published in 1737, and dedicated to the queen, from whom he hoped for some substantial proof of royal munificence, a hope never realized; the queen died 16 days after the presentation of the work. Cruden was three times in his life confined in a lunatic asylum: once soon after his departure from college, again immediately after the publication of his "Concordance," and a third time in 1753.

CRUGER. I. John, colonial mayor of New York, born in New York in 1710, died in 1792. In his youth he was engaged in the slave trade on the African coast, and afterward he settled in New York as a merchant. In 1759 he was elected mayor, and served five years. In 1769 he was elected to the assembly as an Episcopalian and conservative. He was a member of the first New York provincial congress, and wrote the declaration of rights issued by that body in 1765. In 1774 he was one of a committee appointed by the assembly to correspond with Edmund Burke, their agent in England, and with the other colonial assemblies, about the stamp act. This committee rejected the Boston plan of non-importation, and proposed a congress of deputies from the colonies. In 1775 he was speaker of the assembly, and during the recess he with 13 other members of the ministerial party addressed a letter to Gen. Gage on the alarming state of public affairs. **II. John Harris,** nephew of the preceding, born in New York in 1738, died in London, June 3, 1807. He succeeded his father as a member of the council of New York, and at the beginning of the revolution was also chamberlain of the city. He married a daughter of the British colonel Delancey, and entering the army commanded the first battalion of his corps, becoming lieutenant colonel. He was captured while with a party of loyalists celebrating the king's birthday, June 4, 1780, at Belfast, a plantation on the Midway in Georgia, but was afterward exchanged. He conducted with great ability the defence of Fort Ninety-Six in South Carolina in May, 1781, when besieged by Gen. Greene. His corps formed the British centre at the battle of Eutaw Springs, Sept. 8, 1781. His property was confiscated, and on the close of the war he went to England.

III. Henry, brother of the preceding, born in New York in 1739, died there, April 24, 1827. He early went with his father to England, and engaged with him in business in Bristol, succeeding to the control of the business on his father's death in 1780. In 1774 he was elected to parliament from that city, Edmund Burke being his colleague, with whom he agreed in favoring a conciliatory policy toward the Americans. He succeeded his father as mayor of Bristol in 1781. Upon the return of peace he came to New York, where he was a merchant, and was elected to the state senate while yet a member of the British parliament.

CRUIKSHANK, George, an English caricaturist, born in London, Sept. 27, 1792, died Feb. 1, 1878. His father and elder brother were engravers, and occasionally practised caricaturing. It is said that he thought of following the theatrical profession, and appeared several times upon the stage while yet a young man. He possessed dramatic talent, and in after years appeared in the amateur performances instituted by Mr. Dickens. His earliest designs were in illustration of juvenile and song books. He obtained admission to the royal academy, then under the superintendence of Fuseli; but all the seats were occupied, and he did not again attempt to enter as a student, though he often appeared as an exhibitor. He was next engaged in the publication of a monthly periodical called "The Scourge," and another, "The Meteor," for which he furnished the illustrations. He was an ardent liberal, and became extensively known as a political caricaturist. From 1819 to 1821 he illustrated a number of political publications; among others, a series of squibs on the public and private life of the prince regent, and the marriage and trial of Queen Caroline. He had in the mean time been also engaged in illustrating a work called "Life in London," written by Pierce Egan and intended to warn young men against the dangers of what is called "seeing life." But the moral aim of the artist was not kept in view by the author, and Cruikshank abandoned the work before its completion. It had, however, a great sale both in England and America. From 1824 for nearly 30 years he produced a great number of works exhibiting the highest qualities of comic genius; also many serious works, among the most noteworthy of which are his illustrations of Maxwell's "History of Ireland." A vast number of novels, almanacs, poems, magazines, &c., have been illustrated by his prolific pencil. In 1842 he published the first number of "Cruikshank's Omnibus," the letterpress edited by Laman Blanchard. In many of his earlier works, such as the "Gin Shop," the "Upas Tree," the "Gin Juggernaut," and others, he had shown a desire to make his genius contribute to the cause of morality. In 1847 he published a series of eight prints entitled "The Bottle," powerfully depicting the evils of intemperance. They were immensely popular, and were dramatized and exhibited in eight London theatres at the same time. These were followed by other works having the same tendency. He became himself a convert to the doctrine of total abstinence, and, as an artist, speaker, and writer, contributed greatly to the advancement of the cause. In his later years he devoted much of his time to oil painting, and showed considerable skill and power. One of his paintings, "Disturbing the Congregation," was purchased by Prince Albert, and has been engraved; another, "The Worship of Bacchus," was exhibited to the queen at Westminster in 1863, and has also been engraved, the figures being all outlined by Cruikshank himself.

CRUIKSHANK, or **Cruickshanks, William,** a Scottish anatomist, born in Edinburgh in 1745, died in London, June 27, 1800. After having studied from 1764 to 1771 at Glasgow, he went to London with a letter of introduction to William Hunter, who appointed him librarian, and afterward his assistant. After Dr. Hunter's death he continued in concert with Dr. Baillie to preside over his school. His "Anatomy of the Absorbent Vessels" (1786) attracted much attention among medical men in England and on the continent. In opposition to the views of Haller, he asserted that when portions of nerves are cut out of living animals they may be reproduced. His paper on this subject was published in the "Transactions" of the royal society for 1794. His memoir on yellow fever, which toward the end of the 18th century prevailed in the United States, and especially in Philadelphia, was published in the latter city in 1798. He is the author of other medical writings, of which the most important are those on insensible perspiration.

CRUSADE (Port. *cruzado*), a Portuguese coin, either of gold or silver, named from the cross, and palm leaves arranged in the form of a cross, which figure upon it. The first crusades were struck off in 1457, on the publication of a bull by Pope Calixtus III. for a crusade against the Turks. The silver crusades are called old or new, according as they were struck before or since 1722. The old are worth 400 reis (about 60 cents), and the new 480 reis.

CRUSADES (Fr. *croisade*), the name given to the expeditions by which the Christian nations of Europe, in the 11th, 12th, and 13th centuries, sought to recover Palestine from the Mussulmans. The Holy Land was among the early conquests of the Saracens, the caliph Omar having taken Jerusalem A. D. 637. Thus all the places most sacred in the eyes of Christians passed under the control of the votaries of a new religion; and though some of the Saracenic rulers treated pilgrims humanely, others behaved tyrannically. The Abbassides were a superior race, and the most famous caliph of that line, Haroun al-Rashid, sent the keys of Jerusalem to his great occidental contemporary, Charlemagne, which assured the safety of Christian visitors to that city. The holy sepulchre and the church of the resurrection

were in the hands of the Christians; and the tribute exacted from the Christian inhabitants and pilgrims was small. The Fatimite caliphs, who became masters of Jerusalem about 972, pursued the liberal policy of the Abbassides until the time of Hakem, who was a fanatic, and persecuted the Christians, interfered with the pilgrims, and defaced the holy places. His conduct excited much indignation in the West, which abated when his successors returned to the wiser course of his predecessors. The church and the sepulchre assumed their former state, and pilgrimage became more common than ever, embracing men of every condition, and women of all ranks. The Fatimite or Egyptian caliphs, though they never again sought deliberately to put a stop to pilgrimage, did not always protect the pilgrims, who had much ill usage to complain of, and who made it known to all Christendom. When the Seljuk Turks conquered Palestine, they inflicted all manner of atrocities on the Christian residents, and treated pilgrims with great indignity and cruelty. While the rage that this caused throughout Europe was at its height, the Byzantine emperor, Michael VII., fearing the Turks would take his capital, sent an embassy to Gregory VII. entreating assistance. The pope addressed the rulers of the European states, urging war on the Turks, and foreshadowing the crusades. But the crusades were precipitated by the action of an obscure man, Peter the Hermit, who had become imbued with deep religious enthusiam. He was a monk, and by birth a Picard. Visiting Jerusalem, he was an eyewitness of the insults and cruelties of the Turks, and experienced some of them. He became possessed of the idea that he was to deliver the holy sepulchre, and told the patriarch of Jerusalem that he would cause the western nations to drive out the infidels. The patriarch gave him letters entreating aid, and Peter visited Urban II., who saw that he was an enthusiast, and not the less likely to move Christendom because of his austerity, vehemence, and humble condition. The pope encouraged him, and Peter departed to preach a crusade in Italy and France, which he did with such effect that all other business was neglected, and the minds of men of all degrees were most powerfully affected. Christendom then felt the disgrace involved in allowing the Holy Land to remain in the hands of the Turks. Pilgrimages had become so common that they were made by companies of thousands; and their violent interruption was everywhere felt and resented. Human policy turned religious zeal to a useful purpose. Those statesmen who were capable of taking a broad view of affairs may have thought there was great danger that the Mussulmans would come to the West if the Christians should not go to the East. The pope wished to bring the Byzantine empire into the Latin fold. He held a council at Piacenza in March, 1095, which was numerously attended, and at which the Byzantine envoys pleaded their country's cause. It was determined to hold a more general council, which met at Clermont in November, 1095, and French, Germans, Italians, and others were present. The pope's eloquence was so effectual that when he declared the holy war was commanded from on high, the multitude exclaimed, "God wills it! God wills it!" The pope suggested that those who entered on the enterprise should assume the cross on the shoulder or breast. This was agreed to, and the first clergyman who took it, from the hands of Urban II., was the bishop of Puy. The count of Toulouse was the first temporal prince who assumed the cross. The cross was originally red, but different colors were subsequently adopted by different nations. Every person who assumed the cross was known as a *croisé*, or cross-wearer, whence the name of the enterprise. The crusading spirit spread over Britain and the northern nations, much inflamed by the decree passed at Clermont that whoso should go on the expedition should be regarded as having performed all penances. It was to be a pilgrimage on the largest scale, with the pilgrims armed. The spirit was shared by all classes, and by people of every description, including the worst criminals. The number that assumed the cross was almost incalculable. In the spring of 1096 a large body of the lower orders, under the lead of Peter the Hermit, began the march across Germany. They were compelled to divide, and the smaller party, led by a Burgundian knight, Walter the Penniless, going in advance, was annihilated in Bulgaria. The larger party suffered severely, and was guilty of great atrocities, but Peter brought the bulk of it to Constantinople, where he was joined by Walter. They were landed in Asia, where they were nearly all destroyed by the Turks, Peter having left them. A third division, consisting of Germans, led by a monk named Gottschalk, was massacred in Hungary. A fourth, estimated at 200,000, and composed of various peoples, was led by some nobles from Germany, but it was destroyed by the Hungarians, after having perpetrated terrible outrages. The real crusade was very different from these rabble gatherings. No king joined it, but it was headed by a number of eminent feudal princes: Godfrey de Bouillon, duke of Lower Lorraine, Robert, duke of Normandy, Hugh, count of Vermandois, Raymond, count of Toulouse, the counts of Flanders and Chartres, Bohemond, prince of Taranto, Tancred, and others. Godfrey is often mentioned as the leader of the crusading hosts, but he held no such position, though much was conceded to him. After many adventures, including contests with the Greeks, to whose emperor most of the chiefs took the oath of fealty, the crusaders were united in Asia Minor, where they besieged Nicæa, which surrendered to the Greeks. The first great encounter with the Turks took place at Dorylæum, July 4, 1097, and, after a long doubtful contest, ended in their victory. Pursuing

their march, thousands died of privation, and many more lost their horses. Had the Turks then vigorously assailed them, they would have been destroyed. Antioch was besieged, and taken after many months, but less through crusading valor than by the treachery of a citizen, June, 1098. Here the victors were besieged in their turn by a great Mussulman army, which had failed to take Edessa, where Baldwin, brother of Godfrey, had established a principality. The crusaders were apparently on the eve of destruction, when they were saved by a revival of the enthusiastic spirit in which their undertaking originated. It was declared that the steel head of the lance that pierced the Saviour was found under the altar of the church of St. Peter, and its possession was regarded as an assurance of that victory which the invaders won soon after, the Mussulman forces being destroyed or driven off. This victory was facilitated by dissensions among the Mussulmans. Months elapsed before the crusaders resumed their original purpose, and then but 21,500 soldiers marched upon Jerusalem, 1,500 only being mounted. Meeting with no resistance, they arrived before the holy city, which, though valiantly defended, fell into their hands after a siege that closed with an assault, and a massacre of almost unequalled atrocity, July 15, 1099. Godfrey de Bouillon was chosen first head of the Latin dominion of Jerusalem, July 23. This event marks the completion of the first crusade, though the war between Christians and Mussulmans was continued, involving the destruction of new immense hosts of Germans, Italians, and French, under the duke of Bavaria and others.—When Edessa fell into the hands of the Turks in 1145, Christendom was again aroused, and listened readily to the entreaties for assistance that came from the East. St. Bernard preached a second crusade in France, Germany, and elsewhere. Louis VII. of France and Conrad III. of Germany assumed the cross and set out for Jerusalem, the latter in May, the former in June, 1147. The emperor led an immense force by the old route of Hungary and Bulgaria to Constantinople, meeting with the usual Greek treachery. He passed into Asia, but soon lost more than four fifths of his army, which was betrayed by the Greeks into the hands of the Turks. Conrad made his way at the head of a small force to Nicæa, where he found Louis with his army. After a variety of adventures, in which the French were nearly destroyed, the emperor and the king reached Palestine, and with the fragments of their armies, aided by the templars, hospitallers, and forces of the Latin kingdom, besieged Damascus, where they failed completely. The monarchs returned to Europe in 1149. For some years the Christians in Palestine defended themselves with success against the Mussulmans, but the rise of the celebrated Saladin to power in Egypt and Syria was fatal to their cause. Defeated in the battle of Hattin or Tiberias in 1187, they surrendered even Jerusalem to Saladin soon after that event. Tyre was the only place of any consequence which they retained.—The news of the fall of Jerusalem caused much excitement in the West. A third crusade was resolved upon. The emperor of Germany, Frederick Barbarossa, who had accompanied his uncle Conrad III. in the second crusade, and the kings of France and England, Philip Augustus and Henry II., took the cross. Numerous bands of Christians soon reached Palestine, and Acre was besieged by an immense host. Saladin aided the besieged from without, and this contest was waged for almost two years. The German emperor had organized a great army, better provided, disciplined, and led than any previous crusading force. This army marched by the usual overland route. In Asia Minor they defeated the Turks, but not without heavy losses. Frederick lost his life while attempting to cross the Calycadnus in Cilicia, after which little was done by his army, the remnants of which finally reached Acre. Meantime, Richard I. of England (having succeeded Henry in 1189) and Philip Augustus of France had arrived with their forces at Acre, which surrendered (1191), and the crusaders, in violation of their word, butchered 3,000 Mussulman hostages. Philip Augustus soon withdrew from the crusade, alienated and disgusted by Richard's arrogance; but he left a portion of his army to aid that leader, who marched toward Jaffa, defeating Saladin on his way in a pitched battle. Jaffa was abandoned to him, but this was nearly the term of his crusading career. He wished to proceed immediately to Jerusalem, but was thwarted, and two months were lost. The crusaders then marched to Ramla, near Jerusalem, but were forced to fall back. The next year Richard resumed operations, and the city might have been taken if the enterprise had been vigorously pushed. Why it was not is unknown. Richard retreated to the seacoast. His last act was to relieve Jaffa, which Saladin had assailed. A truce was agreed to, Sept. 2, 1192, on terms quite as favorable as the Christians could have expected, access to the holy places at Jerusalem being allowed by Saladin. Thus terminated the third crusade. An attempt made to preach a new crusade, after the expiration of the truce between Richard and Saladin, had little success out of Germany. From that country bands of nobles and others proceeded to Palestine, where they served to keep up the remains of the Latin kingdom, frequently defeating the Turks, but accomplishing nothing of consequence.—In 1198 Innocent III. resolved to get up a new crusade. The eloquence of Foulques of Neuilly was employed with considerable success. The fourth crusade was now commenced. Though intended to injure the Mussulmans, it probably did more to enable the Turks to establish themselves permanently in Europe than any other event. It was mainly French in its character and composition. The counts of Champagne, Blois,

and Flanders, and Simon de Montfort, were the principal leaders. The marquis of Montferrat, in Italy, acted with them, and was followed by many Italians. The crusading spirit extended to Germany and Hungary, and in the latter country the king assumed the cross. The French crusaders despatched a deputation to Venice to make arrangements for the transportation of their forces to Palestine by sea. The Venetians engaged to transport a large army; but when in 1202 the crusaders assembled at Venice, they could not pay the price named, whereupon it was agreed that in lieu of money they should aid the Venetians to subdue Zara in Dalmatia, which had revolted. This, though not under the command of their chief, the marquis of Montferrat, and in defiance of papal prohibition, they accomplished. The Venetians were commanded by the doge Enrico Dandolo, then nearly blind and more than 90 years old. Montferrat then rejoined them. Here the combined forces entered into an agreement with Alexis, son of the deposed Byzantine emperor Isaac Angelus, to restore the fallen monarch. The opposition of the pope to this singular undertaking had little effect. The expedition proceeded to Constantinople, which was taken, and Isaac Angelus and his son were raised to the throne (1203). Soon, however, dissensions broke out between the allies. The restored princes were compelled to fight their restorers, but against their will, and with no good to themselves; for the Greeks hated them, overthrew them, and placed another emperor on the throne. Isaac died of terror, and Alexis was slain. The crusaders, affecting to be the champions of the dead princes, waged successful war with the new emperor, besieged and took Constantinople (1204), which they pillaged, and established a Latin empire, the conquered territory being divided between the Venetians and their western associates. The ultimate effect of this crusade was to weaken the principal barrier against Mussulman progress westward, so that when the new Turkish power was established in Asia Minor it experienced but moderate resistance from Byzantium.—In the spring of 1212 a French peasant boy named Stephen preached a crusade of boys. Though the enterprise was condemned by the university of Paris and by royal edict, nevertheless several thousand boys, by some estimated as high as 30,000, embarked at Marseilles in August of that year. They were shipwrecked on the island of San Pietro, and the greater part perished; the rest were sold into slavery to the Mohammedans. A similar expedition, advocated by a peasant boy named Nicholas, in Germany, mustered at Cologne; but after various disasters it was abandoned. These expeditions are known in history as the "children's crusade."—The fifth crusade, 1216, was the work of Pope Innocent III., and was joined by Hungarians, Italians, Germans, English, and French. Andrew II., king of Hungary, led a large army to Palestine, and, in connection with the dukes of Austria and Bavaria, made one campaign, when he returned home. The Germans remained, and having been joined by others, they transferred the war to Egypt (1218). Damietta was besieged and taken, and the crusaders received large reënforcements from England, France, and Italy. The Mussulmans now offered Jerusalem, and even all Palestine, to the victors, on condition that they should leave Egypt, and most of them were for accepting terms which embraced all that the first crusades had been intended to gain. But the papal legate, and the templars and hospitallers, who were joined by the Italian leaders, were able to bring about the rejection of the offer. After a delay of months the crusaders advanced upon Cairo, but the expedition failed entirely, and they were glad to humble themselves before the sultan, who allowed them to leave the country. The pope, Honorius III., attributed the failure to the emperor Frederick II., who had not kept his crusading vow. It was not till 1228 that the emperor went to Palestine with a small force, he being then excommunicate, the effect of which was greatly to weaken his power. Yet he did much, and made a treaty with the sultan, by which the Christians were to be allowed to visit Jerusalem freely, and Bethlehem, Nazareth, and other places were made over to them. He was permitted to visit the church of the sepulchre, from the altar of which he took the crown, and put it on his head. Thus the fifth crusade was brought to an honorable termination, and the emperor returned to Germany in 1229.—The folly of the Christians soon led to the loss of all that Frederick had gained for them. They quarrelled, and some of the independent Mussulman rulers were thereby encouraged to refuse to be bound by the treaty, and were successful in their warfare. Again Europe was filled with complaints. A sixth crusade was proclaimed, but with no good result; and the sultan of Egypt, resolved to be beforehand with his enemies, entered Palestine, and drove the Christians from Jerusalem. Hereupon the nobility of England and France, in 1238, resolved to go to the relief of Palestine. The French, under various leaders, arrived there first, and achieved some brilliant successes. These were followed by reverses and dissensions, and most of the French left the country. The English then arrived, headed by the earl of Cornwall, brother of Henry III., who was well received by the Christians, whose affairs he completely reëstablished. Jerusalem and most of the Latin kingdom were ceded to them, and numerous captives were released. Cornwall then departed, and the sixth crusade was honorably ended in 1240.—The seventh crusade grew out of that vast Mongol movement which terrified the world in the 13th century. The Kharizmian horde, flying before the Mongols, sought refuge in Egypt, but were persuaded by the sultan to attack Palestine. They entered

that country, and in 1244 stormed Jerusalem, perpetrating horrors equal to those which had marked its Christian conquest in 1099. Christians and Mussulmans were compelled to league against them, but were crushed by the savages and their Egyptian allies. Acre became the refuge of the remnants of the Christians, and was the only place of importance left to the cross. The Kharizmians were soon destroyed or expelled by the Egyptians themselves, who now held Jerusalem. These events had the usual effect on Europe. At the council of Lyons (1245), a seventh crusade was proclaimed. It was chiefly confined to France and England; for though the king of Norway took the cross, he never drew his sword in its cause, and Germany and Italy were not in a state to afford assistance. Louis IX. of France, known as St. Louis, was the leader. A large army was assembled at Cyprus in 1248, and after a long delay proceeded to Egypt. The English joined it there. Damietta was taken (1249), and the crusaders directed their steps to Cairo. Mansoora fell before them, but the rash behavior of some of the French leaders caused them to pay dearly for the victory. The Egyptians resisted bravely and skilfully. Communication between the invaders and Damietta, the base of their operations, was cut off, and they were shut up in their camp, where sickness and famine thinned their number. Attempting to retreat, they were utterly routed, and the king and his brothers, with many nobles and knights, became captives (1250). The rest of the army were slaughtered, 30,000 falling in all. The king and his companions were finally released, but not until they had experienced many dangers. Damietta was given up, and large sums were promised to the victors. Most of the survivors regarded the crusade as at an end, and departed from a land which had received them so roughly. Not so Louis, who went to Acre, and determined to remain in Palestine. This resolution he maintained for four years, exerting himself strenuously for the Christian cause, fortifying several places, and preserving union. Compelled by the condition of France to return home in 1254, his departure was followed by dissensions. The templars and hospitallers made open war on each other. The Egyptians, having extended their power over the Syrian Mussulmans, now fell on the Christians. The war lasted for years, and was characterized by constant Christian reverses, in spite of the valor of the losing party. At length the Latin principality of Antioch fell in 1268, myriads of Christians being slain, or sold into slavery. Nothing was left but Acre.—For the last time Europe was moved to serious exertion, and the eighth crusade was undertaken. Louis IX., undiscouraged by his Egyptian failure, assembled a large force, which sailed in 1270. He landed in northern Africa, near Tunis, influenced by a false report of the dey's conversion to Christianity, and the hope of securing him as an ally. He met with no firm resistance in the field, but the light troops of the Moors harassed the French exceedingly. Sickness raged in the invading ranks, and after crowds of brave soldiers and illustrious nobles had fallen, the king himself died. The French immediately gave up the crusade; but they had been joined by a band of English auxiliaries, headed by Prince Edward, afterward King Edward I., and these resolved to proceed to Palestine. Spending the winter in Sicily, they sailed for Acre in the spring of 1271, the last expedition of the kind that ever reached that place. The force was only 1,000 strong, but the name of Plantagenet was great in the East. Sultan Bibars, who had been so successful over the Christians, immediately retreated. Edward managed to assemble 7,000 men, and defeated a large Mussulman army, and then stormed Nazareth, which became the scene of a sweeping massacre. Here he was struck down by disease, and his followers died in great numbers. His life was attempted by an assassin. On his recovery, seeing that success could not be looked for, he concluded a truce of ten years, and departed for his own country (1272); and so ended the last crusade, 177 years from the time the first had been preached.—Gregory X. sought to evoke a ninth, but with no success. In 1289 Tripoli, on the Phœnician coast, the last fief of the kingdom of Jerusalem, was taken by Sultan Kelaun. The remnants of that kingdom fell into his hands without resistance, save Acre, which he besieged at the head of an overwhelming force. The greater part of the inhabitants withdrew, but the soldiers of the three military orders, and some others, defended it resolutely to the last. The city was stormed (May 18, 1291), and the defenders massacred, or sold into slavery; 60,000 are said to have been killed or taken, probably an exaggeration.—The most important works treating specially of the crusades are: *Gesta Dei per Francos, sive Orientalium Expeditionum et Regni Francorum Hierosolymitani Historia*, edited by Jacques Bongars (2 vols. fol., Hanover, 1611), a collection of the ancient histories of the crusades, the principal of which are also found, translated into French, in Guizot's *Collection des mémoires relatifs à l'histoire de France;* Mailly, *L'Esprit des croisades* (Paris, 1780); Choiseul-Daillecourt, *De l'influence des croisades sur l'état des peuples en Europe* (Paris, 1810); Michaud, *Histoire des croisades* (Paris, 1812–'22); Heeren, *Ueber den Einfluss der Kreuzzüge* (Göttingen, 1803); Wilken, *Geschichte der Kreuzzüge* (Leipsic, 1807–'32); Haken, *Gemälde der Kreuzzüge* (Frankfort, 1808–'20); Sporschill, *Geschichte der Kreuzzüge* (Leipsic, 1843 *et seq.*); Navarrete, *Disertacion historica sobre la parte que tuvieron los Españoles en las guerras de ultramaro o de las cruzadas* (Madrid, 1816); Hallam's "View of the State of Europe during the Middle Ages" (1818); Mills's "History of the Crusades" (London, 1819); G. P. R. James,

"Chivalry and the Crusades" (1838); the latter volumes of Gibbon's "Decline and Fall of the Roman Empire;" Procter's "History of the Crusades" (London, 1854); and Gray's "Children's Crusade," (New York, 1870).

CRUSENSTOLPE, Magnus Jacob, a Swedish author, born at Jönköping March 11, 1795, died in January, 1865. He was appointed assessor of the superior court of Stockholm in 1825, and became generally known in 1828 by a political work (*Politiska åsigter*), in which he eulogized what he termed the era of liberty, extending from 1719 to 1772. In concert with Hjerta he became in the same year editor of an opposition political paper, but the two collaborators soon separated, each to found a journal of his own. Hjerta established the *Aftonbladet*, which still exists, advocating extreme democratic ideas, while Crusenstolpe became editor in 1830 of the *Fäderneslandet*, in which he renounced the liberal principles he had formerly maintained, and which ceased when the patronage of government was withdrawn from it in 1833. In 1834 appeared his *Skildringar ur det inre af dagens historia*, a piquant mélange of truth and poetry on questions of social order, which passed through many editions; and subsequently he purchased the Tessin library, celebrated for its historical manuscripts, from which he took the materials for his *Portefeuille* (5 vols., 1837–'45), and for his *Historisk tafla af Gustav IV. Adolph's första lefnadsår* (1837). From 1838 to 1851 he published a political almanac under the title *Ställningar och förhållanden*, which had great popularity, but which reflected upon the government, and caused his imprisonment for three years, a condemnation that resulted in several violent riots. His *Morianen* (6 vols., Stockholm, 1840–'44) is a romantic description of the history of Sweden during the Holstein-Gottorp dynasty. He afterward published a number of novels, including *Bigtfadern* (1842), *Carl Johan och Svenskarne* (1845–'6), and *Huset Tessin* (1847–'9). His stories show skill in the construction of the plot, and great purity of style. They are very popular in northern Europe, and most of them have been translated into German.

CRUSIUS, Christian August, a German theologian and philosopher, born at Leuna, near Merseburg, Jan. 10, 1715, died in Leipsic, Oct. 18, 1775. He was educated at Leipsic, where he was professor of theology at the time of his death. He was among the principal opponents of the reigning philosophy of Leibnitz and Wolf, which he challenged at once in the name of reason and faith, asserting its incompatibility with Christian dogmas; and he sought to establish a new philosophical scheme which should be perfectly orthodox. Philosophy is in his view the whole body of rational truths, whose objects are eternal, and is divided into logic, metaphysics, and disciplinary or practical philosophy. He subordinated the scholastic principle of contradiction to that of conceptibility (*Gedenkbarkeit*), founded logic upon psychology, attributed to the soul fundamental faculties and a liberty almost as complete as that of the Deity, and made the certainty of human knowledge consist in an inward constraint and inclination of the understanding, the guarantee of the truthfulness of which exists in the divine veracity. The most important of his publications are: *Entwurf der nothwendigen Vernunftwahrheiten* (Leipsic, 1745); *Logik, oder Weg zur Gewissheit und Zuverlässigkeit der menschlichen Erkenntniss* (1747); and *Anleitung über natürliche Begebenheiten ordentlich und vorsichtig zu denken* (1774).

CRUSTACEA, soft-shelled aquatic animals, as the lobsters, crabs, shrimps, &c. Aristotle gave the name *μαλακόστρακα* to this group, to distinguish it from that of the harder-shelled animals, which he called *ὀστρακόδερμα*, or *testacea*, the *mollusca* of our present system of arrangement. In this system the crustacea constitute one class of the primary division *articulata* of the animal kingdom, and the term *malacostraca* has been retained for one great section of the class, while another is called the *entomostraca*, or shelled insects. The subdivisions of these sections are variously presented by different authorities. Those of the malacostraca, as given by Milne-Edwards, are generally adopted. They are as follows:

I. MANDIBULATA (with jaws).

1. *Eyes on peduncles, and movable; feet* 10.

Orders.

Decapoda. { Brachyura, short-tailed—as crabs. / Anomura—as hermit crabs, &c. / Macrura, long-tailed—as lobsters, shrimps, &c.

Stomapoda. { Unipeltata—as squilla. / Bipeltata—as phyllosoma, lucifer, &c.

2. *Eyes sessile and immovable; feet* 14.

Amphipoda—as gammarus, &c., having feet simple and claw-shaped.
Læmodipoda—as leptomera, &c.
Isopoda—as oniscus or wood louse, armadillo, &c.

The entomostraca are divided by the same authority into the

Orders. 3. *Branchiopoda.*

Phyllopoda—as apus, &c.
Cladocera—as daphnia, &c.

4. *Entomostraca Proper.*

Copepoda—as cyclops, &c.
Ostrapoda—as cypris, &c.

II. HAUSTELLATA (suctorial crustaceans).

Aranæiformes—extremities long and slender, adapted for walking.
Siphonostomata—extremities not adapted for walking.
Lernæiformes—extremities rudimentary.

The crustacea are furnished with organs of respiration fitted, unlike those of the other articulata, for use beneath the surface of the water; and they are provided with a shell which is either a horny tegument, as in the case of the shrimp, or a calcareous crust, as in the lobster—not stony like those of the mollusca. It is in fact an external articulated skeleton secreted from their own bodies, and periodically thrown off and renewed. In casting its shield

the animal is said to pine away and become smaller, until at last it readily slips out of its covering. Sometimes when caught they voluntarily cast off a limb by which they are held, and which they often can very well spare, having always at least four pairs besides a pair of claws. In some genera they are so numerous that the animals approximate the myriapoda. A lost limb too is replaced, gaining in growth at each moulting, while the body is unconfined. These organs, with those of respiration, and the tail also, are supported by the body; the antennæ or feelers, eyes, and mouth belong to the head. The organs of sight and touch are remarkably well developed; and it is not a little interesting to find in those very ancient representatives of this class, the trilobites, whose period of existence was as remote as that of the formation of the older Silurian rocks, the same peculiarities and perfection in the structure of the eye as are seen in the highly complicated organization of that of the fly and the butterfly of the present day. The organs of hearing, it is thought, may be detected in some genera of the decapoda, and the habits of many of the crustacea seem to imply the possession of the sense of smell. The shelly covering corresponds in its protuberances and depressions to the form of the important organs of the body within. The progressive motion of the animals is sometimes by walking, sidewise, backward, or forward; by climbing, as seen in their progress over the weeds and rocks at the bottom of the water; by swimming, and also by leaping. The lobster, clumsy as he appears, and loaded with his heavy claws, is often seen to dart backward by suddenly flapping his tail toward the thorax, throwing himself a distance of more than 20 feet with the swiftness of a bird or a dolphin. From the perfection of his sight he can dart like a mouse directly into his hole, scarcely large enough to admit his body. The young shrimps on the ebb of the tide are often seen along the shallow margin of the water, as observed by Paley in his "Natural Theology," skipping into the air in such numbers that they resemble a cloud or thick mist hanging over the edge of the water to the height of half a yard. The trilobites were fitted by their organization for swimming just beneath the surface of the water, and with the back downward. Like the isopod crustacean, the wood louse, they possessed the faculty of rolling themselves into a ball as a defence against attack from above. The crustacea are found mostly in salt water; some species, however, live in lakes and rivers, and a few upon the land. Some of them are of considerable size, the largest being the lobsters; but they are generally very small. The salt water is almost filled with varieties of them so minute that they are rarely observed, and it is said that a portion taken up at random will always be found to contain a number of them. Numerous species furnish food for man, and all are preyed upon by the inhabitants of the deep. Some species of the whale subsist upon minute crustacea drawn in swarms into their huge mouths, and caught in the fibrous web that lines them, while the water is ejected. Many of the terrestrial crustacea, as the land crabs, are said to visit the sea periodically to deposit their spawn. They burrow also in the mud and in damp places, and their gills are always moist. The *oniscus*, or wood louse, has no such arrangement of the gills, and is consequently confined to damp places. Some species of the *anomura* or hermit crabs, known also as soldier crabs, are found living in the sea, and others upon the land. The entomostraca are mostly fresh-water, many of them microscopic. They subsist upon animalcules and microscopic plants. In their progress from the egg to maturity some of them, as the cyclops, undergo curious transformations. Some live in salt water, and one species, the *branchipus stagnalis*, called also the brine worm, lives in the concentrated solutions of salt, such as those of the brine pans of salt works, which contain two pounds of salt to a gallon of water. Some, like the fresh-water cyclops, sustain intense cold without injury, being sometimes frozen into the ice, and coming out when it melts as active as ever. Many are parasites, as the lerneas, and are classed by themselves by some naturalists, with the name *epizoa*. The *lerneonemia monilaris* infests the head of the sprat, attaching itself near the eye. It is luminous in the dark, and the fishermen say that a shoal of sprats is often headed by those thus infested, which they call lantern sprats. The cod also, and other large fish of our deep waters, have their parasitical crustacea. The *limuli*, or king crabs, or "horse-shoes," common upon our coast, are placed by Milne-Edwards in a sub-class, which he calls *xiphosura*. It differs from the other genera by having no organs for conveying food to the mouth. The name is from ξίφος, a sword, with reference to the long, pointed, spear-like appendage usually called the tail. This is used by the natives of the Moluccas to point their weapons. A buckler entirely hides the limbs and organs of the animal as he moves along upon the sand, or in the water upon the bottom. They are found as fossils in the coal and Jura formations of Europe.—The crustacea furnish a great number of species much esteemed as food by man, as the lobster, crabs, shrimp, prawn, &c.; and the business of capturing them is extensively pursued.

CRUVEILHIER, Jean, a French physician, born at Limoges, Feb. 9, 1791, died March 11, 1875. He studied under Boyer and Dupuytren, was a professor at Montpellier, and became attached to the faculty of Paris in 1825. In 1826 he reorganized the anatomical society, founded by Dupuytren in 1769, and in 1835 became professor of pathological anatomy. His great work is the *Anatomie pathologique du corps humain* (2 vols. fol., with 233 plates, 1829–'40); he also published *Anatomie du système nerveux de l'homme* (1845), *Traité d'anatomie descrip-*

tive (1851), and *Traité d'anatomie pathologique générale* (5 vols., 1849–'54).

CRUVELLI, Sophie, Baroness Vigier, a German vocalist, born in Bielefeld, Prussia, Aug. 29, 1824. Her family name was Crüwell, which she Italianized into Cruvelli. Her musical education was acquired in Paris, but she made her début upon the German stage, to which her reputation was confined for several years. She afterward sang in Milan, Venice, and other Italian cities. In 1852 she made her first appearance in London at the Queen's theatre, and was successful. Her voice, a soprano of great strength and purity, her dramatic powers, youth, beauty, and commanding person, created an extraordinary enthusiasm, and both in London and in Paris, which she visited the same year, she became perhaps the most popular singer of the day. In 1856 she was married to the baron Vigier, and abandoned the stage. Ahmed Pasha, son of Mehemet Ali, left her a fortune of 1,000,000 francs, and an almost equal sum in diamonds.

CRUZ, Juana Inez de la, a Mexican poetess, born near the city of Mexico, Nov. 12, 1651, died April 17, 1695. She was quick at acquiring knowledge, and spoke and wrote Latin fluently. She early entered the convent of St. Jerome in Mexico, where she remained till her death. During her life she was called the "tenth muse," and in Spain, where she is known as the "nun of Mexico," her poems have been popular. Her writings have been collected in 2 vols. 4to.

CRYOLITE (Gr. *κρύος*, ice, and *λίθος*, stone), a mineral so named from its fusibility in the flame of a candle. It is a compound of sodium, fluorine, and aluminum, and is used for the preparation of the metal aluminum. Large quantities are imported into England for this and other purposes from Greenland, where it was discovered by a missionary and carried to Copenhagen. It was supposed to be sulphate of barytes until examined by Abildgaard, who found it to contain fluoric acid. Klaproth afterward detected soda. It is a snow-white mineral, partially transparent, of vitreous lustre and brittle texture. Its hardness is 2·5; sp. gr. 3. It cleaves in three directions, two of which are rectangular. It occurs in veins in gneiss with pyrites and galena, and has been found at Arksut in western Greenland, and at Miyask in the Ural. At the former place it constitutes a mass 80 ft. thick and 300 ft. long, included between layers of gneiss, and associated with argentiferous galena and copper and iron pyrites.—Cryolite is extensively employed in the United States in the manufacture of a white porcelain glass, and also in the preparation of caustic soda; 5,000 tons per annum are imported for these purposes.

CRYPTO-CALVINISTS, a name given to the followers of Philip Melanchthon (also called Melanchthonians and Philippists), as distinguished from the strict Lutherans, in the controversy (1552–'74) concerning the doctrine of the Lord's supper. Melanchthon desired a union of the Lutheran and Calvinistic divisions of the Protestant body. He himself inclined toward the Calvinistic view, as appears in the difference between the Augsburg Confession *variata* (1542) and the *invariata* (1530). In the latter it is stated that "the body and blood of Christ are truly present in the Lord's supper (in the form of bread and wine), and are there distributed and received; therefore the opposite doctrine is rejected." In the *variata* (Latin of 1540) the reading is *cum pane et vino vere exhibentur corpus et sanguis Christi vescentibus in cœna Domini;* but the rejection of the "opposite doctrine" is omitted. This alteration Luther did not approve, although he tolerated Melanchthon's position. But many Lutherans were less tolerant, and Melanchthon was accused of being a concealed (crypto-) Calvinist. Melanchthon did not think that either Luther's or Calvin's view should be a bar to communion, but considered the doctrine of the ubiquity of Christ's body, which was made an essential of admission by the church in Würtemberg, unnecessarily introduced "in provincial Latin." He never quarrelled with Luther, but the controversy grew bitter even during his life, and after his death in 1560 became a violent strife. It was opened formally in 1552, when Joachim Westphal, a preacher in Hamburg, proclaimed the Calvinistic doctrine of the Lord's supper heretical. It was especially violent at Bremen, between Tileman Heshusius, and Albert Hardenberg, the cathedral preacher, who defended Calvinism, and was dismissed from his place. In 1558 Heshusius was made general superintendent at Heidelberg, where he detected crypto-Calvinism in Deacon Wilhelm Krebitz. The persecuted doctrine, however, prevailed; Frederick III., elector palatine, went over to the Reformed church, and Lutheranism was expelled from Heidelberg and Bremen. Christoph, duke of Würtemberg, tried to allay the strife, and succeeded in 1561 in obtaining from the diet of princes the recognition of the altered Augsburg Confession. In 1563 Frederick III. incorporated the Heidelberg catechism into the state law, introducing thus a mixed doctrine of Melanchthonian tendency. In the Saxon electorate the Wittenberg and Leipsic theologians undertook a like combination, and were favored by many followers of Melanchthon. Jena, on the other hand, was the centre of extreme Lutheran views, and in a conference of both parties at Altenburg (October, 1568, to March, 1569), the most intemperate accusations were made. A conference called by the elector Augustus of Saxony, at Dresden, Oct. 7–10, 1571, agreed to the *Consensus Dresdensis* and the Wittenberg catechism, which opposed the doctrine of ubiquity, but used Lutheran language. In 1574 an anonymous Calvinistic work, *Exegesis perspicua et ferme integra Controversiæ de Sacra Cœna*, reopened the strife. The elector finally resolved to suppress Calvinism, and Peucer, Melanch-

thon's son-in-law and zealous disciple, was imprisoned for 12 years. In 1586, on the elector's death, his son Christian I. was induced to favor Calvinism. After his death again the duke Frederick William of Saxe-Weimar suppressed Philippism, even putting Crell to death in 1601. —See Heppe's *Geschichte des deutschen Protestantismus* (1852); Giseler's "Church History" (English translation, New York, 1861); and Hagenbach's "History of Doctrines" (English translation, New York, 1861–'2).

CRYSTALLINE LENS, a lenticular transparent body, placed between the aqueous and vitreous humors of the eye in vertebrate animals, at about its anterior third; it is about four lines in diameter and two in thickness in man, and its axis corresponds to the centre of the pupil. The curvature of the lens is in proportion to the density of the medium in which the eye is habitually placed, being very flat in birds of the highest flight, and very convex in aquatic mammals and diving birds; in fishes it is almost spherical. This most important refracting structure of the eye is imbedded in the anterior portion of the vitreous humor, and is enclosed in a membranous capsule, to which it is prevented from adhering by the "liquid of Morgagni." Its structure is complicated, but it consists, when fully formed, of fibres arranged side by side, and united into laminæ by serrations of their edges; the fibres originate in cells; the vessels are confined to the capsule, and are derived from the central artery of the retina; when hardened in spirit, it may be split into three sections, composed of concentric laminæ; it is made up of 58 parts of water and 42 of soluble albumen; the central parts are the densest, and this property increases with age. Besides its refractive power, necessary for distinct vision, it is generally believed that a change in its curvatures, by means of the ciliary muscle and the elasticity of its own tissue, is the mechanism by which the eye is adapted to distinct vision at varying distances; besides the anatomical arrangement of the parts, this view is rendered more probable by the development of this muscle in predaceous birds which have a great range of vision, and by the loss of this power of adaptation when the lens of the human eye is removed or displaced in the operation for cataract. —For the diseases of the lens and its capsule, and their treatment, see CATARACT.

CRYSTALLOGRAPHY, the science of form and structure in the inorganic kingdom of nature. In the organic kingdoms, the animal and vegetable, each species has a specific form and structure evolved from the germ according to a law of development or growth. In the inorganic kingdom also, which includes all inorganic substances, whether natural or artificial, a specific form and structure belong to each species, and the facts and principles involved therein constitute the science of crystallography. The forms are called crystals; so that animals, plants, and crystals are the three kinds of structures characterizing species in nature. As the qualities of crystals depend directly on the forces of the ultimate molecules or particles of matter, crystallography is one of the fundamental departments of molecular physics, and that particular branch which includes cohesive attraction. Cohesive attraction in solidification is nothing but crystallogenic attraction, for all solidification in inorganic nature is crystallization. The solidification of water, making ice, is a turning it into a mass of crystals; and the word crystal is appropriately derived from the Greek κρύσταλλος, ice. The solidification of the vapors of the atmosphere fills the air with snow flakes, which are congeries of crystals or crystalline grains. Solid lava, granite, marble, iron, spermaceti, and indeed all the solid materials of the inorganic globe, are crystalline in grain; so that there is no exaggeration in the statement that the earth has crystal foundations. The elements and their inorganic compounds are, in their perfection, crystals. Carbon crystallized is the diamond. Boron is little less brilliant or hard; and could we reduce oxygen to the solid state, it would probably (as we may infer from its compounds) have no rival among nature's gems. Alumina is the constituent of the sapphire and ruby, and silica of quartz crystals. Magnesia also has its lustrous forms. The metals all crystallize. Silica and alumina combined, along with one or more of the alkalies or earths, make a large part of the mineral ingredients of the globe, its tourmaline, garnet, feldspar, and many other species, all splendent in their finer crystallizations; and limestone, one of the homeliest of all the earth's materials, as we ordinarily see it, occurs in a multitude of brilliant forms, exceeding in variety every other mineral species.—The general principles in the science of crystallography are the following: I. A crystal is bounded by plane surfaces, symmetrically arranged about certain imaginary lines, called axes. II. A crystal has an internal structure which is directly related to the external form, and the axial lines or directions. This internal structure is most obviously exhibited in the property called cleavage. Crystals having this property split or cleave in certain directions, either parallel to one or more of the axial planes, or to diagonals to them; and these directions are fixed in each species. In some cases, cleavage may be effected by the fingers, as with mica and gypsum; in others, by means of a hammer with or without the aid of a knife blade, as in galena, calcite, fluor spar; in others it is indistinguishable, as in quartz and ice. In all species, whether there be cleavage or not, crystals often show a regular internal structure through the arrangement of impurities, or by internal lines, striations, or imperfections; and, when there has been a partial solution or erosion of the crystal, there is often a development of new lines and planes, indicating that the general symmetry of the exterior belongs

to the whole interior. III. The various forms of crystals belong mathematically to six systems of crystallization: the isometric, tetragonal or dimetric, orthorhombic or trimetric, monoclinic, triclinic, and hexagonal. The greater part of the crystalline forms may be regarded as based on four-sided prisms, square, rectangular, rhombic, or rhomboidal in base; and the rest on the regular six-sided prism. The four-sided prisms are either right prisms (erect) or oblique (inclined). Any such four-sided prism may have three fundamental axes crossing at the centre, one vertical axis connecting the centres of the opposite bases and two lateral, connecting the centres of either the opposite lateral faces, or the opposite lateral edges. The six-sided prism is right, and has four axes, one vertical and three lateral. In the right four-sided prisms, the intersections of the axes are all at right angles; in the oblique, one or all of them are oblique angles. A. Right or orthometric systems. 1. Isometric system: the three axes equal, and thus of one kind. The system is named from the Greek *ἴσος*, equal, and *μέτρον*, measure. The cube (fig. 1), contained under six equal square faces, the

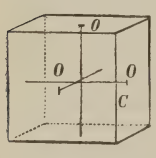


Fig. 1.



Fig. 2.



Fig. 3.

regular octahedron (fig. 2), under eight equal triangular faces, the dodecahedron (fig. 3), under twelve equal rhombic faces, are examples of the forms. The three axes in the cube connect the centres of the opposite faces; in the regular octahedron they connect the apices of the solid angles; in the dodecahedron, the apices of the acuter solid angles. Examples: garnet, diamond, gold, lead, alum. 2. Tetragonal or dimetric system: one axis, called the vertical, unequal to the other two, or lateral, and the lateral equal; the axes thus of two kinds. The term dimetric is from the Greek *δίς*, twice, and *μέτρον*, measure. The square prism (fig. 4) is an example. As the base is a square, the lateral axes, whether connecting

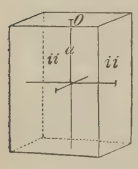


Fig. 4.

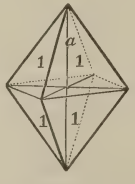


Fig. 5.

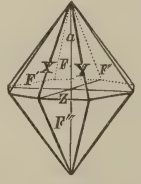


Fig. 6.

the centres of opposite lateral faces or edges, are equal; while the vertical may be of any length, longer or shorter than the lateral. Under this system there are square octahedrons (fig. 5), equilateral eight-sided prisms, and eight-sided double pyramids (fig. 6), besides other forms. Examples: idocrase, zircon, tin. 3. Orthorhombic or trimetric (Gr. *τρίς*, three times, and *μέτρον*) system: the vertical axis unequal to the lateral, and the lateral also unequal, or in other words, the three unequal. In the rectangular prism (fig. 7, a right prism with a rectangular base), the three

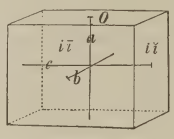


Fig. 7.

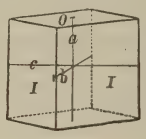


Fig. 8.

axes are lines connecting the centres of opposite faces, and are unequal. In the right rhombic prism (fig. 8) the vertical axis connects the centres of the bases, and the lateral, the centres of the opposite lateral edges. Fig. 9 represents a rhombic octahedron, another form under this system. Of the two lateral axes in this system, the longer is called the macrodiagonal, and the shorter the brachydiagonal. Examples: sulphur, heavy spar, Epsom salt, topaz. B. Oblique or clinometric systems. 4. Monoclinic system: one only of the intersections oblique. This system is named from the Greek *μόνος*, one, and *κλίνειν*, to incline. If we take a model with three unequal axes arranged as in the trimetric system, and then make the vertical axis oblique to one of the lateral, we change the system into the monoclinic. While

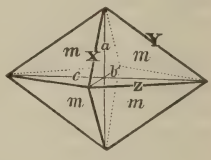


Fig. 9.

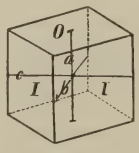


Fig. 10.

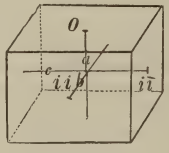


Fig. 11.

the right rhombic prism belongs to the orthorhombic system, the oblique rhombic prism and the related forms belong to the monoclinic system. Fig. 10 represents an oblique rhombic prism with its axes, and fig. 11 an oblique prism on its rectangular base, which is another form of the same system. Examples: borax, Glauber salt, sugar, pyroxene. 5. Triclinic system: all the three intersections oblique and the axes unequal. The forms are oblique prisms contained under rhomboidal faces. Examples: blue vitriol, axinite. C. The axes four in number. 6. Hexagonal system. In the regular hexagonal prism (figs. 12, 13) the vertical axis connects the centres of the bases, and the three

lateral the centres of the opposite lateral faces (fig. 12) or edges (fig. 13); another form is a double 6-sided pyramid (fig. 14), and another a double 12-sided pyramid. Examples: beryl

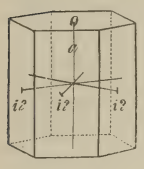


Fig. 12.

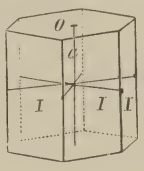


Fig. 13.

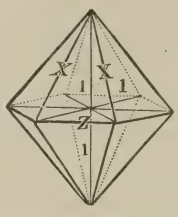


Fig. 14.

or emerald, apatite. Besides the hexagonal prism, this system includes the rhombohedron and its derivative forms, inasmuch as the symmetry of these forms is hexagonal. The rhombohedron (fig. 15) is a solid, bounded like the cube by six equal faces equally inclined to one another, but those faces are rhombic, and the inclinations are oblique. The relations of the rhombohedron may be explained by comparison with a cube. If the cube be placed on one solid angle, with the diagonal from that angle to the opposite solid angle vertical, it will have three edges and three faces meeting at the top angle, and as many edges and faces, alternate in position, meeting at the opposite angle below; while the remaining six edges will form a zigzag around the vertical diagonal; these six edges in zigzag might be called the lateral edges, and the others the terminal. The cube, in this position, is in fact a rhombohedron of 90°. If the cube were elastic, so that the angles could be varied, a little pressure would make it a rhombohedron of an angle greater than 90°, that is, an obtuse rhombohedron (fig. 15); or by drawing it out, it would become a rhombohedron of an angle less than 90°, or an acute rhombohedron (fig. 16). The diagonal here taken as the vertical axis is the true vertical axis of the rhombohedron; and as there are six lateral edges situated symmetrically around it, there are three lateral axes crossing at angles of 60°, as in the regular hexagonal prism. Fig. 17 shows that a hexagonal prism may be made from a rhombohedron by cutting off the edges by a plane

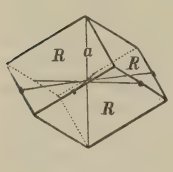


Fig. 15.



Fig. 16.

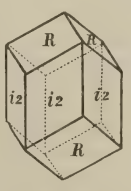


Fig. 17.

parallel to the vertical axis; another may be made by truncating the lateral angles parallel to the same axis. Examples: calcite, sapphire, quartz. Fig. 17 represents a common form of quartz; the same with the lateral edges truncated so as to make a six-sided prism is more common. IV. The relative values of the axes in any species are constant, and these values may be ascertained from the angles of inclination of the planes on one another. In the isometric system the axes are equal (see figs. 1 to 3), and the axial ratio is therefore that of unity. Calling the three axes a, b, c, it is in all isometric species $a : b : c = 1 : 1 : 1$. In the dimetric system the vertical axis (a) is unequal to the lateral (b, c), and the lateral are equal. Calling the lateral 1, $a : b : c = a : 1 : 1$, a being of any length greater or less than 1, and whatever the value, it is constant for the species. The axes of the fundamental octahedron (fig. 5) of any species being thus $a : 1 : 1$, the axes of all other octahedrons of the same species may be expressed by the ratio $ma : 1 : 1$, in which m is any simple number or fraction; and the value of ma being known, the angles of the octahedron may be calculated, and conversely. Which octahedron in a series occurring among the crystals of a species shall be taken as the fundamental octahedron, is generally decided on mathematical grounds, that being so regarded which is of most common occurrence, or is most convenient for exhibiting the mathematical relations of the planes. In zircon (fig. 25) the octahedron assumed to be the unit or fundamental one is that having for the value of the vertical axis 0·6407, that of the lateral being a unit; but it would be as correct mathematically, though less convenient, to make the octahedron $2a : 1 : 1$ the fundamental one, in which case a would equal 1·2814. In calomel, the assumed fundamental octahedron has the value 1·232; and it is beyond question that crystallogenically this octahedron in calomel corresponds to $2a$ of zircon. In the orthorhombic or trimetric system the three axes are unequal, but the ratio is constant for each species, as in the dimetric. Taking the shorter lateral axis (b) as unity, the ratio for sulphur is $a : b : c = 2·344 : 1 : 1·23$; for heavy spar, 1·6107 : 1 : 1·2276. In obtaining these numbers there is the same kind of assumption that is explained above with regard to which octahedron shall be taken as the fundamental one; and so under the other systems of crystallization. In the monoclinic system the obliquity of the prism is a constant, as well as the relative values of the axes. In Glauber salt this inclination is 72° 15′, and the ratio of the axes is $a : b : c = 1·1089 : 1 : 0·8962$. In the hexagonal system, as in the dimetric, the vertical (a) is the varying axis; but its value is constant for each species. In quartz, $a : b : c : d = 1·0999 : 1 : 1 : 1$; in calcite, 0·8543 : 1 : 1 : 1. In other words, taking the lateral axes at unity, the vertical (a) in calcite is 0·8543. Crystallography owes its mathematical basis to this law. Constancy of angle for each species is involved. But this constancy is not absolute, as explained below. V. Each species, while having a constant axial

ratio, may still crystallize in a variety of forms. Thus the diamond, which is isometric, occurs in octahedrons, in dodecahedrons, and in solids that are like octahedrons in general form, but have low pyramids of three or six faces in place of each octahedral face (called tris-octahedrons and hex-octahedrons, the number of faces being either $3 \times 8 = 24$, or $6 \times 8 = 48$), and in various combinations of these forms. So, dimetric species, as idocrase, may occur in simple square prisms, or in square prisms with the lateral edges truncated or bevelled, or with different planes on the basal edges or angles, or in eight-sided prisms, or in square octahedrons, &c. In the species calcite, the number of derivative forms amounts to several hundreds. This simple fact shows that while cohesive attraction in calcite, for example, sometimes produces the fundamental rhombohedron, it may undergo changes of condition so as to produce other forms, and as many such changes as are necessary to give rise to all the various occurring forms of the species, with only this limitation, that they are all based on the fundamental axial ratio, 0·8543 : 1. VI. In all cases of derivative or secondary forms, either (1) all similar parts (parts similarly placed with reference to the axes) are modified alike, or (2) only half, alternate in position, are modified alike. This law may be explained by reference to a square prism. In this prism there are two sets of edges, the basal and lateral; the two sets are unlike, that is, are unequal, and included by different planes. One set may therefore be modified by planes when the other is not; moreover, when one basal edge has a plane on it, all the others will have the same plane, that is, a plane inclined at the same angle to the base; or if one has a dozen different planes, all the others will have the same dozen. Again, if a lateral edge is replaced by one plane, that plane will be equally inclined to the lateral planes, because those planes (or, what is equivalent, the lateral axes) are equal; and in addition, all the lateral edges will have the same plane. In a cube, the 12 edges are all equal and similar; and hence, if one of them has a plane on it, as in fig. 18, there will be a similar plane on each of the 12. Hence, we may distinguish a cube, modified on the edges, however much it may be distorted, by finding the same

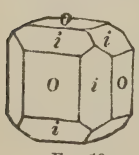


Fig. 18.



Fig. 19.

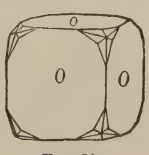


Fig. 20.

planes on all the 12 edges of the solid. The eight angles of a cube are similar, and hence they will all have similar modifications, either one plane, as in fig. 19, or three planes, or six as in fig. 20. Again, the eight angles of a square prism are similar and therefore are modified alike. The square prism and cube differ in this, that in the cube, when there is one plane on each angle, that plane will incline equally to each of the three faces adjoining, because these faces are equal; while in the square prism, the plane will incline equally to the two lateral planes and at a different angle to the base. This general law, "similar parts similarly modified," is in accordance with what complete symmetry would require. The exception mentioned, of half the parts modified without the other half, is exemplified in boracite (fig. 21), in which half of the eight solid angles of the cube have planes unlike those of the other

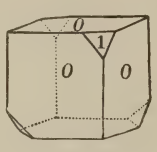


Fig. 21.

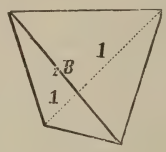


Fig. 22.

half—a mode of modification that gives rise to the tetrahedron (fig. 22) and related forms; in tourmaline, in which the planes at one end of the crystal differ from those at the other; and in pyrite, in which on each edge there is only one plane out of a pair of bevelling planes. Fig. 23 represents a cube with all the edges bevelled, that is, replaced by two similar planes —a holohedral form; while fig. 24 is that of a hemihedral form, only one of the two bevelling planes being present on each edge, a common form of pyrite. All such forms are said to be

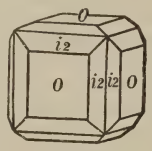


Fig. 23.

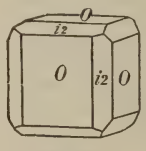


Fig. 24.

hemihedral (Gr. *ἡμισυ*, half, and *ἕδρα*, face), while the former are said to be holohedral (*ὅλος*, all, and *ἕδρα*). Many hemihedral crystals, when undergoing a change of temperature, have opposite electrical poles developed in the parts dissimilarly modified. VII. The derivative forms, under any species, are related to one another by simple multiples of the axial ratios. In calcite the fundamental rhombohedron has the axial ratio just mentioned, 0·8543 : 1, that is, $a = 0{\cdot}8543$. There are a number of derivative rhombohedrons among the crystalline forms of this species; one has the vertical axis $\frac{1}{2}a$; another $\frac{1}{4}a$; others $\frac{5}{2}a$, $\frac{3}{2}a$, $2a$, $3a$, $4a$, and so on, by simple multiples of the vertical axis of the fundamental form. So in zircon, of the dimetric system, as implied above, while a (vertical axis)$=0{\cdot}6407$, the lateral being unity, there is one derivative octahedron (1, fig. 25) with the axes $a : 1 : 1$; another, $2a : 1 : 1$; another, $3a : 1 : 1$; also a diagonal pyramid, $a : 8 : 1$ ($1i$ in fig.); and

three other forms (eight-sided pyramids) whose axes are severally $3a : 3 : 1$ (33, fig. 25); $4a : 4 : 1$ (44, *ib.*); $5a : 5 : 1$ (55 *ib.*); or writing out the value of a, they are $1{\cdot}9221 : 3 : 1$; $2{\cdot}5628 : 4 : 1$; $3{\cdot}2035 : 5 : 1$. Through these numerical ratios the planes or figures of crystals are conveniently lettered, as in this example of zircon, i being used in place of the sign for infinity. The same numerical axial ratios run through all crystalline forms, and by means of them the values of the angles are calculated. These facts show that the modifications which cohesive attraction (or, what is the same, crystallogenic attraction) undergoes in order to produce the various derivative forms of any substance take place according to a law of simple ratios. VIII. The physical characters of crystals have a direct relation to the forms and axes. Cleavage, hardness, color, elasticity, expansibility, and conduction of heat differ in the direction of different axial lines, and are alike in the direction of like axes. The difference of color between light transmitted along the vertical and lateral axes of a prism is often very marked, and the name dichroism (Gr. δίς, twice, and χρόα, color), or the more general term pleochroism, is applied to the property. The hardness often differs sensibly on the terminal and lateral planes of a prism, and also, though less sensibly, in other different directions. IX. The angles of the crystals of a species, though essentially constant, are subject to small variations. The unequal expansion of inequiaxial crystals along different axial directions, alluded to under the last head, occasions a change of angle with a change of temperature; other small variations arise from impurities, or isomorphous substitutions, or irregularities of crystallization. There are also many instances of curved crystallizations which are exceptions to the general rule. A familiar example of curving forms is afforded by ice or frost as it covers windows and pavements. Diamonds have usually convex instead of plane faces. Rhombohedrons of dolomite and spathic iron often have a curving twist; half the faces are concave and those opposite convex. Other imperfections arise from an oscillating tendency to the formation of two planes, ending in making a striated curving surface. Thus nine-sided prisms of tourmaline are reduced to three-sided prisms with the faces convex. X. While simple crystals are the normal result in crystallization, twins or compound crystals are sometimes formed. The six-rayed stars of snow (fig. 26) and the arrow-head forms of gypsum are examples of compound crystals. In the stars of snow there are three crystals crossing at middle; in the arrow-shaped crystal of gypsum two crystals are united so as to form a regular twin. Many of these twin crystals may be imitated by cutting a model of the form in two, through the middle, and then inverting one part and uniting again the cut surfaces. Fig. 27 represents an octahedron placed on one of its faces with a plane intersecting at middle, and fig. 28 is the same form with the upper half revolved 60°. To explain its formation, it is necessary to suppose that the nucleal or first particle of the crystal was a double molecule made up of two molecules, in which one was thus inverted or revolved on the other. Another example is shown in fig. 30. Fig. 29 is a common form of tin ore; the four-sided prism has a pyramid at each end. It is represented as intersected by a diagonal plane. Fig. 30 is the same form after one half is revolved 90°, and this also is very common in tin ore. Such twins, as well as other facts, prove that molecules have a top and bottom, or, in more correct language, polarity, one end being positive and the other negative, this being the only kind of distinction of top and bottom which we can suppose. Axial lines or directions of attraction are in fact necessarily polar, if it be true, as is supposed, that molecular force of whatever kind is polar. In the case of the compound crystal of snow, the nucleal particle must have consisted of three or six molecules combined. Those prismatic substances are compounded in this way which have the angles of the prism near 60° and 120°, and for the reason that 3 times 120° or 6 times 60° equal 360°, or the complete circle. In a case where this angle is nearly one fifth of 360° (as in marcasite),

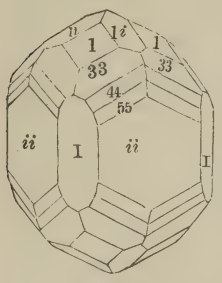


Fig. 25.

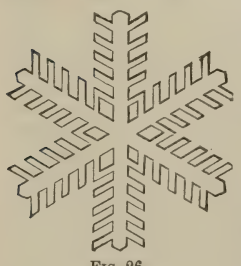

Fig. 26.



Fig. 27.



Fig. 28.

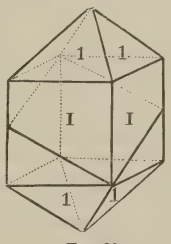


Fig. 29.

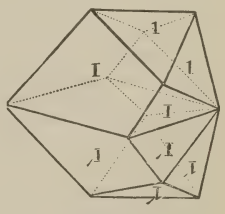


Fig. 30.

the twins consist of five united crystals. In compound crystals of another kind, the composition is produced after the crystal has begun to form, instead of in the first or nucleal particle. A prism, as in rutile, after elongating for a while, takes a sudden bend at each extremity at a particular angle, depending on the values of the axes. In another case, as albite, which is triclinic, a flat prism begins as a thin plate; then a reversed layer is added to either surface; then another like the first plate; then another reversed; and so on, until the crystal consists of a large number of lamellæ, the alternate of them reversed in position, yet all as solidly united as if a simple crystal. Such a kind of composition may be indicated on the surface in a series of fine striations or furrows, each due to a new plane of composition; and they are frequently so fine as to be detected only by means of a magnifying glass. This mode of twin is additional proof of the polarity of the crystallogenic molecule. If there were not some inherent difference in the extremities or opposite sides of the molecules or their axes, which is equivalent to polarity, there could not be this series of reversions during the formation of the crystal. External electric or other influence may be the cause of the reversion. XI. While simple and twin crystals form when circumstances are favorable, in other cases the solidifying material becomes an aggregate of crystalline particles. Regular crystals often require for their formation the nicest adjustment of circumstances as to supply of material, temperature, rate of cooling, or evaporation, &c.; and hence imperfect crystallizations are far the most common in nature. A weak solution spread over a surface may produce a deposit of minute crystals, which, if the solution continues to be gradually supplied, will slowly lengthen, and produce a fibrous or columnar structure. In other cases, whether crystallization take place from solution, or fusion, or otherwise, the result is only a confused aggregate of grains, or the granular structure. Under these circumstances, the tendency in force to exert influence radially from any centre where it is developed or begins action, often leads to concentric or radiated aggregations, or concretions. The point which first commences to solidify, or else a foreign body, as a fragment of wood or a shell, becomes such a centre; and aggregation goes on around it, until the concretion has reached its limits. Basalt and trap rocks which have been formed from fusion are often divided into columns, and the columns have concave and convex surfaces at the joints or cross fractures, proving that they are concretionary in origin. The centre or axis of each column is the centre of the concretionary structure, and therefore it was the position of the first solidifying points in the cooling mass. The distance therefore between the initial solidifying points determines in any case the size of the columns; and as the columns are large the thicker the cooling mass, the distance is greater the slower the cooling. The cracks separating the columns are supposed to be owing to contraction on cooling. XII. The system of crystallization of a given substance sometimes undergoes a total change, owing to external causes. Carbonate of lime ordinarily crystallizes in rhombohedrons, and is then called calcite; but in certain cases it crystallizes in trimetric prisms, and it is then called aragonite. The aragonite appears to form when the solution has a higher than the ordinary temperature. This property of presenting two independent forms is called dimorphism. Besides difference of form, there is in all such cases a difference of hardness and specific gravity. Carbon crystallizes in one set of forms, which are isometric, in the diamond, and in another, hexagonal, in graphite. Glass and stone are dimorphous states of the same substance, and the former may be changed into the latter by slow cooling.—*Modes of Crystallization.* Crystallization requires freedom of movement among the particles engaged in the process. It may take place: 1. From solution, where a solvent serves to disunite the molecules of a solid, and give them the free movement required. The crystallization of sugar or alum from a concentrated solution is an example of this method. The alum solution is simply set away to cool, and the crystals slowly form and cover any object that may be placed in the solution. With many solutions evaporation cautiously carried on will throw down a crop of crystals. Sea water, on slow evaporation, first deposits gypsum, afterward common salt, and then its magnesian salts. 2. From a state of fusion or of vapor. Heat in this case is the dissevering agent, and the removal of heat permits resolidification. Thus water becomes ice, and aqueous vapor snow; and melted lead, sulphur, and other substances may come out in perfect crystals. If a mass of melted sulphur, or of bismuth, after it has crusted over, be tapped and the interior run out, the cavity within will be found lined with crystals. Camphor, when sublimed by a gentle heat, condenses again in delicate crystallizations. 3. From long continued heat without fusion. The heat used for tempering steel is far short of fusion, and yet it allows of a change in the size of the grains throughout the mass. Heat has crystallized beds of earthy sediment, and thus changed them into gneiss and mica schist without fusing the rocks; and there is reason to believe that even a low degree of heat long continued is sufficient for these results. By this means statuary marble, one of the earth's crystalline rocks, has been made of fossiliferous limestones. The white marble of Berkshire, Mass., is probably of the same formation with either the Chazy or the Trenton limestone, rocks full of fossils, in central New York and elsewhere. Such altered rocks are termed in geology metamorphic rocks. Nearly all the gems, and far the larger part of the crystalline rocks of the world, were crys-

tallized by some metamorphic process. 4. From any circumstances that favor the combination of the elements of a compound. Crystallizations often take place at the moment of the combination.—*Origin of the Modifications of Crystals.* The particular modifications of form presented by the crystals of any substance sometimes depend on the nature of the solution depositing the crystals, and sometimes on wider terrestrial conditions. Common salt, crystallizing from pure water, almost invariably takes a cubic form; but if boracic acid is present, the crystals are cubes with truncated angles; or if the solution contains urea, the crystals are octahedrons. Carbonate of copper, in course of deposition, has been observed to change the form of the crystals on the addition of a little ammonia, and again to a still different form on adding sulphuric acid. Sal ammoniac ordinarily crystallizes in octahedrons; but if urea is present, it forms cubes. A floating crystal forming in a solution has been seen to assume secondary planes on becoming attached to the sides of the vessel. There are many examples where a substance, as calcite, for a time crystallized under one form, and afterward began a new form around or on top of the first. At Bristol, Conn., six-sided prisms of calcite have been found surmounted by short, flattened calcite crystals of the variety called nail-head spar. At Wheatley's mine, Phœnixville, Pa., the same species, under the form of the scalenohedron, has been found covered and altered to a six-sided prism. Such facts prove some change, and probably a change in the nature of the solution supplying the carbonate of lime, the ingredient of calcite. In nature the crystals of a substance over a wide region are often identical in form. The calcite of the Niagara limestone at Lockport, N. Y., in all cases has the form called dog-tooth spar, or the scalenohedron; that of Booneville, N. Y., the form of short hexagonal prisms; that of the Rossie lead mine, a combination of other more complex forms. This is a general fact with regard to the crystallizations in rocks. In massive aggregate crystalline rocks there is a tendency to parallelism in the crystals, and hence at a granite quarry it is easier to split the granite in one direction than in others, owing to an approximate parallelism in the cleavage planes of the feldspar. To obtain large crystals artificially from solutions, a large supply of material is of course necessary. The most successful mode is to select certain of the best crystals that have begun to form, and supply them from time to time with new portions of the solution. They will thus continue to enlarge, the crystallizing material tending to aggregate about the ready formed crystals rather than commence a new crop. Cavities in rocks sometimes contain a vast amount of large crystals. At Zinken in Germany, a single cavity was opened last century which afforded 1,000 cwt. of quartz crystals, one of which weighed 800 lbs. In all such cases the supply of material was gradually introduced; for so little silica is taken up by alkaline waters that the solution of silica filling the cavity at any one time could make but a thin lining over its interior. When water freezes, there is at first a sheet of ice made by the shooting of prisms over its surface. After this, as the cold continues, the crust increases in thickness by gradual additions to the under surface, thereby causing an elongation of prismatic crystallizations downward. The body of the ice is consequently columnar, although not distinctly so when examined in its firm state. In the melting of the ice of some lakes in spring, as has been observed at Lake Champlain, this columnar structure usually becomes apparent; and it is sometimes so decided, that when the ice is even a foot thick and strong enough to bear a horse and sleigh, the horse's foot will occasionally strike through, driving down a portion of a half-united columnar mass, which may rise again to refill the place as the foot is withdrawn. When in this condition, a gale at night sometimes leads to a disappearance of all the ice before morning. A fact like this illustrates what must be the condition of the earth's crust if it has slowly cooled from fusion. The crystallizing rock material below, as the crust slowly thickened, would not necessarily take columnar forms; but there would be some system of arrangement in the crystals which would be of a world-wide character; and as the cleavable species feldspar is a universal mineral among igneous rocks, the earth's crust would derive some kind of structure—a cleavage structure, it might be called—from these conditions. Crystallization thus pervades the globe, and has had much to do in determining its grander surface features, as well as making gems, solidifying sedimentary strata, and furnishing material for the statuary and architect. It also affords man one of his best avenues for searching into nature, opening to view facts on which are based some of the profoundest laws in cohesive attraction, heat, light, and chemistry. —There are two methods of applying mathematics to crystallography now much used. One, in which ordinary analytical geometry is employed, is explained at length in the *Anfangsgründe der Krystallographie* and *Elemente der theoretischen Krystallographie* of Dr. C. F. Neumann, and is briefly presented in English in the 1st and 4th editions of Dana's "Mineralogy." The other is explained in Brooke and Miller's "Mineralogy," and also at more length and with more clearness in the "Physical Mineralogy" of Schrauf, published in German at Vienna. Another system, much inferior in beauty, is employed by French crystallographers.

CSABA, a market town of Hungary, in the county of Békés, situated in the great Hungarian plain beyond the Theiss, 63 m. N. of Temesvár, on the railway to Pesth; pop. in 1870, 30,022, mostly Protestant. It carries on a considerable trade in corn, fruit, hemp, flax, cattle, and wine. Prior to 1846, in which year

it was made a market town, it was known as "the largest village of Hungary."

CSANÁD. **I.** A county of Hungary, in the circle beyond the Theiss, bounded S. by the Maros; area, 638 sq. m.; pop. in 1872, 95,847, the majority of whom are Magyars, and the remainder chiefly Slavs and Roumans. The soil is fertile excepting in the swampy regions. Maize, wheat, tobacco, wine, fruit, honey, and wax are produced. Pasturage is extensive; cattle, swine, and horses are raised in great numbers, and there are also fisheries. The principal places are the county town, Makó, and the market town Nagy-Lak, both on the Maros river. **II.** The former chief town of the county, on the Maros, 7 m. S. E. of Makó; pop. in 1870, 4,013 (formerly much larger). King Stephen made it the seat of a bishop, who now resides at Temesvár, but the diocese retains its former name. There are remains of an ancient castle. In 1785 the emperor Joseph II. established in the vicinity a stud in which 3,000 of the finest breeds of Hungarian and foreign horses are kept.

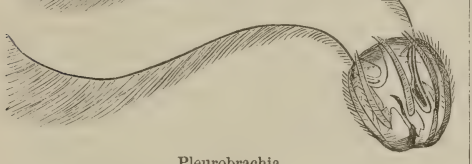
CSOKONAI, Vitéz Mihály, a Hungarian poet, born at Debreczin, Nov. 17, 1773, died Jan. 28, 1805. He was educated at the college of his native town, and appointed professor of classical literature there in 1795, but was soon expelled from this situation on account of his irregular habits. He then commenced the study of the law, which he soon gave up; and during the rest of his life he had no regular employment. His works, principally love poems and comic pieces, have been published in numerous editions.

CSOMA DE KÖRÖS (Körösi Csoma), **Sándor,** a Hungarian traveller and orientalist, born at Körös, in Transylvania, about 1790, died at Darjeeling, in India, April 11, 1842. Of a noble but poor family, he studied gratis at the school of Nagy-Enyed, where at an early age he avowed his intention to make the discovery of the original home of his race, the Magyars, the task of his life. The researches of Klaproth led him to seek the traces of the Uigurs, a people of central Asia mentioned by Arabian writers. In 1815 he went to Göttingen, where he studied medicine and oriental languages, and on his return finally started in 1820 for his great journey of discovery, with scanty means furnished by the liberality of a friend. He passed through the Balkan to Constantinople, visited Egypt and Syria, and wrote his first letter to his friends from Teheran, dated Dec. 21, 1820. The resemblance of a number of Thibetan words to Magyar incited him to acquire the language and to visit the country of Thibet. He traversed Little Bokhara and the desert of Gobi, reached the region of the Himalaya, wandered through its valleys, partly with the English traveller Moorcroft, partly alone, and spent four years (1827–'30) in a Buddhist monastery at Kanam, on a high mountain on the confines of Thibet and India. For his maintenance on his travels he relied upon his medical knowledge and the hospitality of the Asiatic people. But his taciturnity and modesty prevented him from communicating the particulars of his travels and extraordinary sojourn among the Buddhists when he arrived at Calcutta with immense philological collections, gathered in the narrow cells of the snow-bound monastery, and comprising 40,000 Thibetan words. A severe disappointment awaited him here. He had already given up the illusion in regard to the Magyar and Thibetan languages; he now learned with deep grief that his collections, made for the purpose of tracing the Uigurs, were all superfluous, as his discovered sources were translations of well known Sanskrit works. But in the eyes of British scholars in India he had discovered incomparably more than was the object of his patriotic researches. He became the oracle of Thibetan literature and Buddhistic science, before him almost unknown. He was the object of general attention in Calcutta, and Hungary and Transylvania learned from England the fame of their countryman. But he modestly withdrew from society, and destined the money which he received from home (the diet of Transylvania having voted him an ample pension) for works of science for the institutions of his country. When offered a remuneration by the Asiatic society of Bengal for an elaborate catalogue of the 1,100 Thibetan works of their library, which before had been like sealed books, he declared that if he were rich he would willingly pay for the pleasure of the work. With unabated zeal he continued his profound studies of the languages and religions of the East, until he again started in 1842 for the prosecution of his originally intended discovery; but on his journey he was suddenly overtaken by illness and died. His works are: "Essay toward a Dictionary Thibetan and English" (Calcutta, 1834); "Grammar of the Thibetan Language" (1834); an "Analysis of the Kahgyur," the great sacred book of the Buddhists, published in vol. xx. of the "Asiatic Researches;" and numerous articles on Thibetan literature in the "Journal of the Asiatic Society of Bengal."

CSONGRÁD. **I.** A county of Hungary, in the circle beyond the Theiss, intersected by that river and bounded S. E. by the Maros; area, 1,280 sq. m.; pop. in 1872, 207,585, principally Magyars and Roman Catholics. The county is flat, and the soil very fertile, producing wheat, maize, hemp, tobacco, and fruits. There is excellent pasture for horses, cattle, sheep, and swine, which are raised in great numbers. Besides the capital, Szegedin, Vásárhely and Szentes are the largest places. **II.** A market town, formerly capital of the county, 31 m. N. of Szegedin, on the railway to Pesth, and on the right bank of the Theiss; pop. in 1870, 17,356. It contains the ruins of an ancient castle.

CTENOIDS. See Comparative Anatomy, vol. v., p. 183.

CTENOPHORÆ (comb- or fringe-bearers; Gr. κτείς, gen. κτενός, a comb, and φέρειν, to bear), the beroid medusæ, the highest order of the class of acalephs or jelly fishes. They are more or less spherical, the body being made up of eight homologous segments, bearing eight rows of locomotive appendages. About 70 species are enumerated by Agassiz, distributed in more than 30 genera. Of the *pleurobrachia*, common on the N. E. coast of America, he says: "When active, it hangs out a pair of most remarkable appendages, the structure and length and contractility of which are equally surprising, and exceed in wonderful adaptation all I have ever known among animal structures. Two apparently simple, irregular, and unequal threads hang out from opposite sides of the sphere. Presently these appendages may elongate, and equal in length the diameter of the sphere, or surpass it, and increase to 2, 3, 5, 10, and 20 times the diameter of the body, and more and more; so much so, that it would seem as if these threads had the power of endless extension and development. But, as they lengthen, they appear more complicated; from one of their sides other delicate threads shoot



Pleurobrachia.

out like fringes, forming a row of beards like those of the most elegant ostrich feather, and each of these threads itself elongates till it equals in length the diameter of the whole body, and bends in the most graceful curves." A common species of *idyia*, of our coast, of a beautiful rose color, attaining a length of three or four inches, is sometimes so abundant in summer as to tinge large patches of the sea with a delicate rosy hue. They are all voracious, feeding on their fellows.

CTESIAS, a Greek physician and historian, contemporary with Xenophon, born at Cnidus, in Caria, and supposed to have repaired to the Persian court about the year 416 B. C. He accompanied Artaxerxes II. on his expedition against his brother Cyrus, dressed his wounds after the battle of Cunaxa, and returned to Cnidus in 398. During his residence at the Persian court he formed the design of writing a history of Persia; and as physician to the great king, he was allowed access to the state archives. His work, entitled Πέρσικα, in 23 books, opened with a history of the Assyrian monarchy, and brought down the history of Persia to the author's own time. It was often quoted by ancient writers. There are many important discrepancies between Ctesias and Herodotus; and recent researches show that on most of these points the former is untrustworthy. Only a few fragments of this work are extant. Of a second work, entitled Ἰνδικα, we have also a few fragments. Besides these he wrote several others which are entirely lost.

CTESIBIUS, a native of Alexandria, celebrated for his mechanical inventions, flourished in the latter half of the 3d century B. C., or, according to Athenæus, a century later. He is said to have been the first to apply the elastic force of air as moving power. He invented numerous machines, including a clepsydra or water clock, and a hydraulic organ.

CTESIPHON, an Athenian orator of the 4th century B. C., son of Leosthenes. After the disastrous battle of Chæronea (338) he moved that Demosthenes, in consideration of his great services and sacrifices in the cause of Athens and Greece, be honored with a golden crown; whereupon he was prosecuted by Æschines, but was triumphantly defended by Demosthenes himself, who was the real defendant.

CTESIPHON, an ancient city of southern Assyria, on the left bank of the Tigris, opposite Seleucia. It is said to have been founded by a Parthian ruler named Vardanes, but at an uncertain date. It rose into consequence with the Parthian empire, being, according to Strabo, the royal winter residence. It was especially important at the time of the restoration of the Persian empire under the early Sassanides. Tacitus speaks of it as the seat of empire, and it was subsequently, when Seleucia decayed, so large that Septimius Severus took from it 100,000 prisoners. In the time of Gallienus its walls effectually resisted Odenathus, who ravaged the surrounding country, and it was a strong place at the time of Julian's invasion. Some have supposed it to be identical with the primeval city of Calneh, mentioned in Scripture, but this is improbable. It has been identified with the modern Al-Madain (the two cities), near which are ruins called Tak Kesra, or the Arch of Chosroes, which are thought to be remains of the palace of one of the Sassanian princes.

CUBA, an island belonging to Spain, the largest and most westerly of the West India group, lying between the Caribbean sea and the gulf of Mexico, and between lat. 19° 50′ and 23° 10′ N., and lon. 74° 7′ and 84° 58′ W. Its W. extremity, Cape San Antonio, is distant about 130 m. from the coast of Yucatan, from which it is separated by the channel of Yucatan; Point Maysi, its E. end, is 48 m. from Hayti, with the Windward channel between; the strait of Florida separates it on the north from Florida, which is distant 130 m. from Cape Ycacos; and on the south the island of Jamaica lies about 85 m. from English point, near Cape Cruz. The greatest length from E. to W. is 760 m.; the width varies from 20 to 135 m.; area, including dependencies, 47,278 sq. m. In shape it is long, narrow, and slight-

ly curved, the convex side being on the north. The entire coast line is 630 Spanish leagues in extent, equal to about 2,200 English miles. The shores are generally low, and lined with reefs and shallows, extending often from two to three miles into the sea, making the approach difficult and dangerous. Within these reefs there is occasionally a sandy beach, but around the greater part of the island there is a belt of low land but little above the level of the sea, and subject to floods and inundations. Adjacent to the N. coast, which is 306 leagues in length, and more regular in outline than that on the south, are 5 islands, 6 islets, 37 keys, and 521 small keys, the principal of which are Romano (172 sq. m.), Guajaba (21), Coco (28), Turiguaco (51), Cruz (59), Fragoso, Bocas, de Anton, Verde, and the keys on the Colorado banks. On the S. side, the coast line of which is 324 leagues long, are, besides the isle of Pines, which is 43 m. long and 35 broad, 6 islets, 26 keys, and 677 small keys; of these, Cayo Largo contains 32 sq. m. Between Cape Cruz and Casilda lie the Cayos de las Doce Leguas, which form an advanced curve to the coast, and which, were the sea to recede a little, would add very considerably to the width of the island. There is another similar curve between Jagua and Cape Corrientes, formed by the Cayos de los Jardines. Most of the keys and reefs are of coral or limestone formation, and the extreme irregularity of the shore line is due to the ease with which rocks of this kind are acted on by water. Notwithstanding these peculiarities of the coast, Cuba has over 200 ports, including sheltered landings. The principal of these, besides Havana, which has one of the best harbors in the West Indies, are Bahia Honda, Puerto de Cabanas, Matanzas, Cardenas, Sagua la Grande, La Guanaja, Nuevitas, Manati, Malagueta, Puerto del Padre, Gibara, Banes, and Nipe, on the N. coast; and Guantanamo, Santiago de Cuba, Manzanillo, Cauto, Santa Cruz, Saza, Tunas, Casilda, Cienfuegos, Cochinos, and La Broa, on the S.—Cuba is intersected by a range of mountains, more or less broken, which extends through the entire island from E. to W., and from which the streams flow to the sea on each side. At the E. extremity the mountains spread over a wider territory than elsewhere, and some of them attain the height of 8,000 ft. From Point Maysi to Cape Cruz the range called Sierra del Cobre skirts the S. coast for about 200 m. At the W. end the mountains also approach the coast. Some geographers have classified this chain into six groups; but it is generally divided into three, the eastern, central, and western. Among them lie fertile valleys, some of which are 200 m. long and 30 m. wide. The ranges which give shape to these valleys generally give them also their names, as Sierra de los Organos, Sierra de Anafe, Sierra de la Perdiz. In some places groups of hills form the margin of the island, but for the most part low tracts intervene between the central elevation and the shores; and in the wet season these are rendered almost impassable by the depth of water and the tenacity of the mud. From Jagua to Point Sabina, on the S. side, the country is a continuous swamp for 160 m., and there are many similar tracts of less extent on the N. side.—The rivers are not large, but they are numerous, amounting to 260, independent of rivulets and torrents. The Cauto, the only navigable stream, properly so called, rises in the Sierra del Cobre and empties on the S. coast, a few miles from Manzanillo, opposite the banks of Buena Esperanza. Schooners ascend it about 60 m. Gunboats have passed up during the present civil war, and several engagements have taken place on its banks. Some other streams are navigable for small vessels from 8 to 20 m. After the Cauto, the most important rivers are the Güines and the Ay or Negro. At one time a canal was projected through the Güines river, which would cut the island in two. The Ay is remarkable for its falls, some of which are nearly 200 ft. high, and for its great natural bridge, after passing under which its waters flow smoothly. There are many mineral springs in the island, the principal of which are those known as the baths of San Diego; they are sulphurous and thermal. Of similar character are those of Madruga, although one of the springs there is said to contain copper. There are other sulphur springs at Charco Azul, Santa Maria del Rosario, San Miguel, and at Santa Fé on the isle of Pines; and sulphuro-gaseous springs exist at Cienfuegos and at Ciego Montero. Nitre predominates in the springs of Copey, and in those of Cacaqual near Havana. The latter was once a frequented bathing place, but is now abandoned.—The geological formation of Cuba is little known, the island having been thoroughly studied only in its commercial aspect. Even its topography is not yet accurately settled. The grand map engraved in Barcelona, although very valuable, cannot always be depended upon, for it is not the result of triangulation, but a compilation of many maps drawn by native surveyors, added to and completed by the labors of the navy. The works of Humboldt still furnish the most exact data concerning the geology of Cuba. He thinks that the Caribbean was once a mediterranean sea, of which the mountain ranges of micaceous schist in Cuba, Hayti, and Jamaica formed the N. limit. The highest peaks of all these islands occur where the islands approach each other nearest, which induces the belief that the nucleus of these mountain ranges was between Cape Tiburon, Hayti, Cape Morant, Jamaica, and the mountains of Cobre, which overtop the Blue mountains of Jamaica. The Caribbean range, after its subsidence into the sea, contributed to the formation of the islands. In Humboldt's opinion four fifths of Cuba consists of low lands. The ground is covered with secondary and tertiary formations, and is

traversed by rocks of granite, syenite, gneiss, and euphotide. The gradual decline of the lime formations toward the north and west indicates marine connection of the same rocks with the low lands of the Bahamas, Florida, and Yucatan. The W. part is granitic, and as primitive schist and gneiss have been found, it is presumed that out of these formations came the gold which was so earnestly sought for in the early days of the conquest. The central part contains calcareous formations of clay, limestone, and grès. In the compact and cavernous layers are contained ferruginous veins and the red earth so common in Cuba. These result from the decomposition of superficial layers of oxidized iron with silica and slate, or with the limestone above them. Humboldt classified this formation as the Güines limestone, and regarded it as the most ancient formation, that in Trinidad and elsewhere being more recent. He considered the gypsum of Cuba as of secondary and not tertiary formation. He also drew a line between the Güines limestone and the conglomerate of the keys and small islands off the S. coast. Notwithstanding the so-called plutonic formations, there are no lavas of recent date.—Almost all metals and minerals applicable to industry are found in Cuba: gold, silver, iron, copper, quicksilver, lead, asphaltum in all its various forms, antimony, arsenic, magnesia, copperas, loadstone, gypsum, red lead, ochre, alum, salt, talc, &c. Gold is found in the Saramaguacan and other rivers. Silver occurs at San Fernando, Pinar del Rio, Canarsé, and Yumuri. There is copper in almost all the metamorphic rocks all over the island. It is found usually in the form of copper pyrites, sulphurets, and carbonates. Coal fit for combustion has not been discovered. Springs and mines of bitumen exist in various parts, sometimes in a calcareous and sometimes in a serpentine formation. The interstices of the serpentines, diorites, and euphotides are generally filled with *chapapote*, a highly inflammable bitumen, which is used as a substitute for coal. There are large deposits of rock salt on both the N. and S. coasts. Marble and jasper of very fine quality are found in many places. In the isle of Pines are beautiful colored marbles, and a quarry of white marble but little inferior to statuary marble. There are immense deposits of pure white sand, suitable for earthenware.—The climate is warm and dry during the greater part of the year, but it is more temperate than in other islands of the same latitude, and more equable than in many more northern countries. The thermometer never rises so high as it sometimes does in New York in the hot months, and sunstrokes are unknown. From May to October the heat seldom reaches 100° F. in any part of the island. The highest recorded temperature, in observations extending over many years since 1801, was 104°. In December and January the air is cooled by the N. winds, and the thermometer has occasionally fallen to the freezing point. The average temperature of Havana is 77°; maximum 89°, minimum 50°. The average temperature of the hottest month is 82°, and of the coldest 72°. In Santiago de Cuba the average of the year is 80°; of the hottest month 84°, of the coldest 73°. The topographical position of Cuba reduces the four seasons of the year to two, the rainy and the dry. In the former the rain pours down in torrents almost every day. The rainfall in the island in one year has reached 133 inches. The rainy season begins in May or June and ends in November, when the season known as the "cold" or the "dry" commences. The most rain falls in September and October. In the dry season the dews are very abundant both at night and in the early morning. The average number of rainy days in a year is 102. The greatest rainfall noted in Havana in a year is 50 in. 6 lines; the smallest, 32 in. 7 lines. In the Eastern department it hails frequently between February and July. There is no record of snow having fallen in Cuba, excepting on Dec. 24–25, 1856, when the coldest term ever known on the island was experienced, and snow fell near Villa Clara, in the central part of the island. Violent thunder storms occur from June to September. Earthquakes are seldom felt in the western districts, but are frequent in the eastern, especially in the vicinity of Santiago de Cuba. The salubrity of the climate is variously estimated. Some writers consider it favorable to prolonged life; but the most remarkable instances of longevity have been found among the negro and aboriginal races. Others think it unfavorable to health. The yellow fever is justly feared by Europeans and those coming from more temperate climates. The Cuban physicians believe that this disease was not known in the island till 1762. It is not yet known in the interior, and its appearance at many places is recent. It was introduced into Puerto Principe only a few years ago by Spanish troops.—The vegetation of Cuba is very luxuriant. The forests contain some woods almost as hard as iron. One of them is called the *quiebra hacha*, the axe-breaker; others, such as the *jucaro*, are imperishable even under water. For fine furniture they are unrivalled. The marquetry work of the apartment in the Escorial used by Philip II. was made of these woods. Few of these varieties are found excepting in the West India islands, but their value was long ago appreciated by the Spanish government, and led to the establishment of ship building in the island as early as the beginning of the 18th century. From 1724 to 1796 Havana was the great nursery of the Spanish navy, but the work was finally abandoned because it took employment from the mother country. Lignum vitæ and various kinds of dye woods, ebony, rosewood, mahogany, cedar, fustic, lancewood, and many woods suitable for building purposes such as acana, jocuma, &c.,

abound. The cedar (*cedrela odorata*, Linn.) furnishes the material of the cigar boxes. The cocoanut palm, the *palma real*, and the African palm (the Portuguese Parra counted 41 varieties of the palm tree), the sour orange, and the lemon are indigenous. Humboldt says: "We might believe that the entire island was originally a forest of palms and wild lime and orange trees. These last, which have a small fruit, are probably anterior to the arrival of the Europeans, who carried there the *agrumi* of the gardens, which rarely exceed 10 or 15 ft. in height." The fruits are those common to the tropics. The pineapple is indigenous. Of the alimentary plants, the banana is one of the most important. When the island was discovered there were six varieties of the sweet potato cultivated by the natives, as well as the yuca or cassava, and Indian corn.—Though the forests are extensive and almost impenetrable, they are inhabited by no wild animals larger than the wild dogs which are occasionally met with. They resemble wolves both in appearance and habits, and are very destructive to young cattle and poultry. They sprung from the domestic European dog, the change in their size, appearance, and habits having been effected by their wild life through many generations. The *jutia* is an animal of the size of the muskrat, and resembles in its habits the porcupine and the raccoon of the United States, living in trees and feeding on leaves and fruits. More than 200 species of indigenous birds, exclusive of the domesticated kinds, are known, many of them remarkable for the beauty of their plumage. Of migratory birds, the ducks of Florida, or *del norte*, are the most numerous. The indigenous *huyuyo* is a miniature of the English duck, and is of splendid plumage. Birds of prey are few. The list of fishes, according to Poey, contains 641 species. Oysters and other small shellfish are numerous, but of inferior quality compared with those of more northern latitudes. The reefs and shallows abound in turtle, which the Indians bred in large enclosures on the coast to supply their lack of meat; they dried their flesh and thus preserved it for a long time. The alligator, cayman, and iguana are common. There are few snakes: the *maja*, the largest, sometimes 12 or 14 ft. long, is harmless; the *juba*, about 6 ft. long, is venomous. The insects are numerous, but none are properly venomous. The bite of the tarantula produces fever, but the scorpion is less poisonous than that of Europe. Among the noxious insects are the mosquito, of which there are 12 varieties; the sand fly; the *nigua* or jigger; the *anobium bibliothecarium*, which destroys not only books, but every article of vegetable origin, boring through the obstacle which covers it; and the *bibijagua*, an ant which destroys all living vegetable matter. The latter afforded to the Indians a delicious morsel in its honeycomb of eggs. The varieties of the butterfly are estimated at 300, and there are as many kinds of flies. The *cocuyo*, or firefly, is celebrated for its jewel-like beauty, and is often worn by ladies to ornament their dresses. The Florida bee, which is exotic, is similar to the European variety. The indigenous bee is not classified by Poey as *apis mellifica*, but as a *trigona fulvipeda*. It is much smaller than the Florida bee, and its honey is whiter, but its wax is almost black.—The inhabitants of Cuba are mostly of Spanish and of African descent. For a time after the conquest in 1511, none but Castilians were allowed to settle there; but after the prohibition was removed, colonists from all the provinces, and even from the Canary islands, came thither. All these classes of Spaniards are now represented in the island. The Biscayans hire out as mechanics; the Catalans, who are numerous, devote themselves to hard labor; the Asturians, Castilians, and Andalusians occupy clerkships and pursue the learned professions. In the Eastern department traces still exist of the French emigration from Santo Domingo, and in Cardenas the influence of North Americans is visible even in the shape of the buildings. The Germans in Havana devote themselves to commerce, and they speak Spanish better than most foreigners. The offspring of foreigners, whether black or white, are called *criollos*, or creoles; the children of creoles are called *riollos;* and the country people are known as *guagiros*, an indigenous term which is also in use on the South American continent. Of the aborigines some families still exist in the Eastern department, as at Caney, near Santiago. They intermarry like the Jews, and their appearance is, as Columbus described it, "not as dark as Canary islanders." The whites consist principally of Spaniards and creoles, whom political hatred keeps ever apart; the hatred is not so much personal as collective, on account of their class relations. The creoles are distinguished by their intelligence, conscientiousness, and hospitality. They own sugar estates, houses, and other real estate, while the Spaniards, who are only occasionally planters, monopolize most of the trade. The retail trade is almost entirely carried on by Catalans, so much so that in the interior all Spaniards are known as Catalans. All the offices are in the hands of Spaniards, being the rewards generally of political services. Of the negroes, those who speak Spanish are called *ladinos;* those who do not, *bozales*. Africans are called *negros de nacion*, and their progeny become *criollos*. The cross of a white man with a black woman, and *vice versa*, produces a mulatto; the offspring of a mulatto and a black, a *chino;* all others are known as quadroons. All the numerical reports of the population have been incomplete, the slaves in particular having been generally underestimated. The latest trustworthy census was taken in 1862, those of 1867 and 1872 being merely official estimates. The following is a synopsis of the census of 1862:

DEPARTMENTS.	Whites.	Free colored.	Emancipados.	Slaves.	Total.
Western	601,636	125,852	4,028	302,880	1,034,396
Central	46,834	13,358	247	15,287	75,726
Eastern	116,260	82,207	246	50,383	249,096
Total population					1,359,438

These figures include 34,050 Chinese, but are exclusive of the army and navy and other transient population. It is supposed that the total population of the island has decreased to some extent since 1868, as the deaths and banishments in consequence of the civil war have been very considerable. Notwithstanding the most solemn treaty obligations, the slave trade is still actively prosecuted. Between 1817 and 1842, according to English statistical writers, who were furnished the data from their consulates, 335,000 slaves were imported; a greater number in 25 years than in the 31 years when the trade was legalized. Between 1842 and 1852, no fewer than 45,000 negroes were imported. The "mixed commission," presided over by an English judge, had little effect in suppressing the traffic. A slaver was occasionally captured, and, if a lawful prize, she was retained as such by her captors; but her slaves were apprenticed, under the name of *emancipados*, to the planters, for terms of 8, 10, and 15 years, according to their ages. At a later period they were openly traded by the government. The emancipados were no better off than the slaves. When they went into the interior they were reported as dead, and the names of old and infirm slaves whom they substituted were given to them. The late law concerning slavery, passed June 23, 1870, declares free all born after its passage, and all who had attained at that time the age of 60; but so determined has been the opposition of the slave traders that the government has not been able to enforce it. Chinese were first brought under contract from Amoy in 1847, by the royal society of public works, and were given out for the proportionate cost of their transportation. Afterward the business was converted into a new slave trade by companies and private persons, who raised the prices of importations. Over 50,000 had been brought in up to 1873, and the records of the courts afford abundant proof of the oppression and violence of which they are the victims. When the importation had reached 33,000 it was calculated that the annual mortality was 17 per cent. Indians from Yucatan were also imported at one time under contract, but the government of Mexico prohibited it by enactment, partly in consequence of a regulation passed in Havana authorizing flogging as a punishment. The largest city of the island is Havana, with 205,000 inhabitants. There are 13 other cities, 12 towns, and 324 centres of population known as *pueblos* (villages) and *caserios* (hamlets).—Productive industry in Cuba is devoted mainly to sugar and tobacco raising. General agriculture was early hampered by many obstacles, the greatest of which was the scarcity of labor. The system of *mesta* or free breeding of cattle interfered much with cultivation of the soil. This system, which was instituted by Charles V., gave the common use of the lands for pasturage after the crops had been gathered. In 1555 this law was modified, and many favors and privileges were granted to agriculturists. Loans of money ($4,000 to persons of known probity) were made by the government to those who devoted themselves to the raising of sugar cane, and the sale of sugar estates for debt was prohibited. The most noteworthy concession was the one authorizing the importation of 1,000 negro slaves. Special privileges were afterward granted to the cultivators of coffee, indigo, and other productions. The creation of the *consulado* (board of trade, public works, and agriculture) of Havana, and of the "economical society of the friends of the country," contributed to the progress of agriculture. The reports of the royal society, and the *Papel periódico* (1790), which took the place of the *Gaceta* (1763), directed the industry of the island into new channels; and the emigration from Santo Domingo and the continent added to its prosperity. But general agriculture has given place mostly to sugar making. The differential duties imposed by foreign nations as an offset to the duties collected in Cuba reduced the production of coffee to little more than enough for local consumption. The only agricultural product which has not been superseded by sugar as a chief article raised for export is tobacco. Cotton is cultivated, but not to any extent compared with the great staples. The mulberry tree (*morus multicaulis*) grows to perfection, and is raised for silkworms. These worms were introduced into Cuba by Don P. Alejandro Auber, who affirms that they are more prolific and more productive than anywhere else in the world. The cactus, or cochineal fig tree, has been the subject of successful experiments by the economical society. Cacao is cultivated in Remedios on a small scale; and Indian corn, bananas, and other produce called in Cuba grains and *viandas*, are raised in quantities sufficient for home consumption. The only fruits raised for export are oranges and pineapples. The tobacco known all over the world as Havana tobacco is grown on the S. coast at the extreme W. end of the island, on a strip of country called the Vuelta Abajo, extending from Rio Hondo to Cuyaguateje and the river Mantua. The tract is of an irregular shape, about 80 m. long by 20 wide. Next in value to the tobacco of the Vuelta Abajo is that of Mayari, which grows over an extent of 54 m. from Mayari to Holguin. The tobacco of outlying districts (*tabaco de partido*) is of good quality all over the island, and equal to any produced in Hayti or on the banks of the Magdalena in Colombia. A *caballeria* (33 acres) of land produces on an average the following crops:

Sugar	75,000 lbs.	Corn	20,000 lbs.
Coffee	12,500 "	Rice	50,000 "
Tobacco	9,000 "	Sago	33,000 "
Cacao	25,000 "	Bananas	2,000 bunches.
Cotton	6,000 "	Yuca	50,000 lbs.
Indigo	1,500 "		

Cattle raising is largely carried on, and although it does not fully supply the demand, it represents a large amount of capital. The alternate system of pasturage has been recently adopted, but the plan of natural pasturage finds most favor. Estates on which cattle and horses are raised are called *hatos*, and those where hogs are bred, *corrales*. Of late years very good stock, including Durham and Devonshire bulls, has been imported into Camaguey, but the insurrection has swept them away. The establishment of artificial pastures (*potreros*), and the importation of good stock, have tended to improve the breed of cattle. The grass chiefly sown in the artificial pastures is the Pará grass, which has lately been introduced. The 3,285 breeding estates produce annually $5,286,180. Cuba contains 1,059,432 caballerias, equal to about 35,000,000 acres of land, distributed as follows:

In agriculture proper	80,682
" barren lands	225,195
" forests	466,331
" natural pastures	262,620
" artificial "	24,604
Total	1,059,432

The production of sugar and molasses has decreased somewhat since the breaking out of the civil war. The following exhibits the amount of these staples in tons produced during the first four years of the war:

YEARS.	Sugar.	Molasses.	Total.
1868	749,389	286,161	1,035,550
1869	726,237	279,550	1,005,787
1870	725,505	245,870	971,375
1871	546,479	184,965	731,444

The value of the products from sugar cane, tobacco, and the honey bee, for 1871, was $78,371,897.—The mineral productions of Cuba have been hitherto but little developed. The precious metals do not exist in sufficient quantities to pay for working. Copper mines were opened as early as 1515 to obtain metal for casting cannon, but they were soon abandoned on account of the restrictions placed by the government on the business. In 1741, when Admiral Vernon took the bay of Guantanamo and founded the town of Cumberland Harbor (now Pichardo), copper money was coined by order of Governor Cajigal. From this time up to 1830 the mines were unworked. In the latter year foreign companies reopened them, and a native company, called the "San José," was organized soon after. A mining excitement followed, and in 1844 there were 227 mines in operation. Many of these were afterward abandoned, but two foreign companies and the company of San José, in the Sierra del Cobre, were in operation at the beginning of the war. Those of Buyatabo in the Central department, of Los Pobres in Trinidad, and of the Vuelta Abajo have given but poor results. Iron ore of fair quality has been discovered in the jurisdiction of La Habana, but has not been worked to much extent. Mines of alum and copperas were once worked in the mountains of Juragua, but were soon abandoned. Salt being a government monopoly, the natural salt mines are not worked, but salt is collected in considerable quantities along the coast. Over 100,000 lbs. are made yearly at Point Ycacos and at Choco. There is some doubt whether mining would be very profitable in Cuba, even if it were not paralyzed by taxation.—The manufacturing industry consists chiefly in the preparation of sugar, molasses, and coffee, the bleaching of wax, and the making of cigars. Other manufactures are of little importance, the people generally being disinclined to mechanical pursuits.—Previous to 1762 Cuba had no commerce. At that date permission was given to subjects born in Spain and coming from certain places to trade freely. The laws of 1789 and later ones aided the development of trade, but the interests of the island were in perpetual conflict with interests in Europe. At one time the port of Seville had the monopoly of the trade; at a later period it was given to Cadiz. For over 200 years these were the only ports allowed to carry on commerce with the Indies. In 1778 Charles III. made an effort to foster commerce by making all the ports of Spain free for trade with Cuba. In the first period of Cuban history, from the discovery of the island to 1762, the country lived in great part by smuggling. In the second period, during which trade with Spanish ports through the port of Havana was permitted, the commerce was not sufficient to feed the island, and at times it was found necessary to allow trade with foreign ports, which soon grew into importance. These exceptional years and the value of imports from foreign countries were as follows: 1792, $1,904,339; 1798, $917,307; 1799, $2,003,564; 1805, $10,541,138; 1810, $10,875,789. In the succeeding years up to 1818 there was always some trade carried on under foreign flags, which at times exceeded $9,000,000, and was never under $2,557,000. The third period of the commercial history of Cuba, beginning with 1818, when foreign trade was allowed, is marked by her growth and prosperity. Passaron, in his work on the "Resources and Commerce of Cuba" (1858), proves that Spain herself had been benefited by this concession, and that in 1854 her exports to Cuba exceeded those sent by her to all America in 1792. In 1859, when the statistical bureau was better organized than ever before, the total exports of Cuba were officially estimated at $57,455,185 32; imports, $43,465,679 57. The exports of sugar and molasses in tons for 1870 and 1871 were as follows:

DESTINATION.	SUGAR.		MOLASSES.	
	1870.	1871.	1870.	1871.
United States	346,222	337,428	178,751	139,437
Great Britain	203,539	73,151	14,301	8,991
British provinces	.....	.....	19,929	2,790
Spain and the Mediterranean	52,533	37,901	.....	.....
France	34,970	10,032	.....	.....
Northern Europe	9,662	7,258	.....	.....
Other countries	12,960	5,171	407	1,241

The value of exports for 1870 and 1871 was as follows:

ARTICLES.	1870.	1871.
Sugar	$60,000,000	$50,400,000
Molasses	8,000,000	5,600,000
Leaf tobacco	3,941,186	4,640,000
Cigars	6,659,480	6,611,440
Coffee, wax, &c	4,000,000	4,000,000
Total	$82,600,666	$71,251,440

These figures must be regarded as only an approximation to the true amounts, as all the exports are officially undervalued. The exports to the United States in 1871, according to United States official data, amounted to $58,240,584; in 1872, $67,720,205. The imports from the United States in 1871 were $15,840,202; in 1872, $14,751,956. No statistics of the values of imports for late years are accessible. The following table exhibits the quantities of some of the principal imports during three years:

ARTICLES.	1870.	1871.	1872.
Jerked beef, quintals	296,282	240,454	183,093
Codfish, quintals	86,340	44,857	98,019
Flour, bbls	330,959	224,755	247,726
Rice, quintals	717,135	507,836	547,671
Lard, quintals	205,456	84,246	58,492
Wines, pipes	79,898	67,366	64,198
Boards, M. feet	21,503	18,634	32,668
Box shooks, number	653,481	890,287	627,882
Hhd. shooks, number	60,715	71,598	55,914
Oats, tons	145,366	89,340	128,187
Olive oil, jars	382,726	363,004	437,935
Coal oil, gals	90,100	84,719	58,298
Whale oil, gals	650	1,500	4,320

Of these articles, the lard, lumber, shooks, coal oil, and whale oil come from the United States; the wine and olive oil from Spain; the flour and oats from the United States and Spain; the jerked beef from South America; the codfish from the British provinces, the United States, and Europe; and the rice from the United States, Spain, and the East Indies. In 1859, 42 per cent. of the commerce was under the Spanish flag, and 58 per cent. under foreign flags. The following shows the number and tonnage of the American, Spanish, British, and French vessels entered at the port of Havana in the years 1870 and 1871:

YEARS.	AMERICAN.		SPANISH.		BRITISH.		FRENCH.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1870	738	361,658	677	181,792	340	125,572	35	37,490
1871	740	335,158	670	191,022	262	77,504	34	34,932

In 1872 the entries of vessels at Havana were 1,960, of 738,310 aggregate tonnage. Of the exports of the same year, 70·75 per cent. were sent to the United States and 19·27 per cent. to Great Britain. Under the system of discriminating duties Spain was able for a long time to almost monopolize the trade in flour and provisions, but of late years she has gradually been losing ground. In 1863 Spain landed in Cuba 210,262 bbls. of flour, while the United States sent there but 1,180 bbls.; but in 1872 the shipments of the former had decreased to 195,205 bbls., and those of the latter increased to 52,521 bbls. During the same period Spain's shipments of rice fell off one half and those of the United States doubled.—The system of education in Cuba originally conformed to that in Spain, but it has been modified from time to time according to the personal characters of the rulers of the island. Under the house of Austria laws were passed authorizing the creation of universities in the Indies. The university of Havana was established in 1722 by a pontifical bull of Innocent XIII., which was approved by the Spanish government, Jan. 5, 1729. There had been classes many years before in the convent of the Franciscans in Havana, where Latin, philosophy, and theology were taught, but no degrees were conferred. Government had no direct supervision of education till 1842. In that year the Dominican friars ceased to govern the "Royal and Pontifical university," which was declared a national establishment under the name of "Literary university." The governor general nominated the professors, who were subsequently approved by the supreme government. The study of the natural sciences was introduced at that date. Gen. Concha, in connection with the professors, drew up a complete plan of public education; but subsequently, in 1863, when he was minister, the classes in philosophy were ordered to be suppressed, and the system was assimilated to that in Spain. Since then philosophical and transcendental studies have been confined within very narrow limits; but the faculties in the ecclesiastical seminaries and in the colleges of the religious orders have been increased. There are two seminaries for the clergy, the college of San Carlos in Havana, and that of San Basilio in Santiago de Cuba; the former is also the successor of the college of St. Ambrose and of the school of the Jesuits, where instruction was given to laymen. The expenses of education in the higher branches are defrayed from the public revenues, according to official statements. The town councils pay the expenses of primary education. The amount disbursed for educational purposes in 1866 was as follows: primary schools, $1,131,354; grammar schools, $459,056; collegiate seminaries, $42,000; professional education, $73,619; university education, $71,600; total, $1,777,729. There are 209 public schools on the island, of which 93 are for girls, and 245 private schools. The whole number of children attending them

is 22,200 of both sexes, of whom 21,000 are white and 1,200 colored. Two thirds of the whole receive education free. The proportion of those who can read and write, exclusive of Chinese, is: white males, 45 per cent.; white females, 35 per cent.; colored males, 5 per cent.; colored females, 6 per cent. The number of newspapers, political and literary, published in 1868, was 39, distributed as follows: in Havana, 21; in Santiago de Cuba, 5; in Matanzas, 3; in Cienfuegos, Villa Clara, and Santo Espiritu, 2 each; in Cardenas, Remedios, Trinidad, and Puerto Principe, 1 each. In 1869, during the few days of the liberty of the press granted by Gen. Dulce, 40 new journals were started in Havana alone; but of many of these one number only was issued. Of the *Verdad* ("Truth"), which from its form and matter might aspire to the rank of a political newspaper, three numbers appeared and 14,000 copies were sold each day, an unprecedented occurrence in Havana.—The history of literature in Cuba begins with the revival of belles-lettres in the time of Charles III. The prominent names in general literature in the 18th century are Francisco de Arango and Tomas Romay; a part of the works of the latter belong to the next century. In the 19th century figure Frederico de Armas, Anastasio Carrillo, José de Frias, Manuel Costales, Ramon Zambrana, and Gaspar Betancourt, better known as El Lugareño. The Cuban poets of the 18th century are Rubalcaba of Santiago de Cuba, and Manuel Zequicha of Havana; of this century, José M. Heredia, Placido, Milanés, and many others. Of sacred writers and moralists, T. Barea, Rafael de Castillo y Sucre, Francisco del Cristo, Felix Veranes, José Agustin Caballero, and Father Gonzales belong to the last century; in the present century Felix Varela, Father Oliva, and Friar Remigio Cernados are the most distinguished. In philosophy the same Father Caballero was prominent in the 18th century; in the present, the principal writers are Felix Varela, professor of modern philosophy in Cuba and in many other parts of Spanish America, and formerly vicar apostolic of New York, José de la Luz Caballero, and José Gonzales del Valle. As jurisconsults, the lights of the 18th century are Francisco Conde, Pedro Ayala, and Rafael Gonzales; of the 19th, Francisco de Armas, José A. Govantes, Anacleto Bermudez, José Antonio Cintra, Isidro Carbonell, and many others. The historians of the 18th century are Arrati and Urrutia; of the 19th, A. Valdez, José Arango y Castillo, and the writers of the historical bureau of the economical society. Dramatic literature was little cultivated in the last century. The only work which was often represented on the stage was the *Príncipe jardinero*, by Father José Rodriguez (a) Capacho, who was also a poet and a satirical writer. In this century, the poet Milanés produced the *Conde de Alarcon*. Some European writers resident in Cuba have enriched her literature, such as Pablo Boloix, Pedro A. Auber, Father Velez, and others. In the fine arts Vermay and Perouani have been distinguished. Of all these writers, whose names are taken from the *Biblioteca Cubana* of 1869, none are now living. —Cuba, with the islands dependent upon it, forms the captain-generalcy of La Habana, which is subject in all branches of the administration to one authority, the representative of the Spanish sovereignty, who has the unlimited powers of a general in time of war, and is accountable only to the home government by which he is appointed. He is assisted by an administrative council, also chosen by the supreme government, whose opinion is taken in certain cases, chiefly in matters of finance. The division of the island is sixfold, civil, military, naval, fiscal, judicial, and ecclesiastical. In its civil or political aspect the whole island is under the command of a governor-in-chief (*gobernador superior*), who is always the captain general; and is divided into five governorships, as follows: La Habana, Matanzas, the Central or Puerto Principe, the Eastern or Santiago de Cuba, and the Western. Each of these departments is in charge of a lieutenant governor, and they are subdivided into 33 political districts. The captain general has also military command of the entire island. The military divisions are three, the Western, Central, and Eastern, the respective capitals of which are Havana, Puerto Principe, and Santiago de Cuba. Of the first the captain general has the sole charge; the second is commanded by the governor of Puerto Principe, the third by the governor of Santiago de Cuba. These departments are subdivided into eight *comandancias generales*, viz.: Pinar del Rio, Havana, Matanzas, Santa Clara, Moron, El Principe, Holguin, and Cuba. There are also various *comandancias de armas*. The naval government is in charge of a commandant general, whose headquarters (*apostadero*) are in Havana. It is divided into five provinces, Havana, San Juan de los Remedios, Nuevitas, Santiago de Cuba, and Cienfuegos. These are subdivided into *subdelegaciones*. Each province is under the command of an adjutant (*ayudante*), and each subdelegation of an *alcalde de mar*. The fiscal administration consists of a central bureau of taxes and seven local districts, which are Pinar del Rio, Havana, Matanzas, Santa Clara, Trinidad, Puerto Principe, and Santiago de Cuba. The captain general is the general superintendent of finance. Judicially the island is divided into two *audiencias:* the pretorial court of Havana, which comprises the western part, including Remedios and Santo Espiritu; and that of Santiago de Cuba, the eastern portion. These are subdivided into 25 judicial districts, each of which is in charge of a local judge or justice of the peace. The ecclesiastical divisions are two, the Eastern diocese, which is ruled by the archbishop of Santiago de Cuba, and the Western, by the bishop of Havana. They are reciprocally courts of appeal,

each from the other's decrees. The revenues are derived from two sources, maritime and inland. The former comprise customs and lighthouse dues, ship visits, &c.; the latter direct and indirect taxes upon almost everything assessible, and lotteries. There are no statistics accessible later than those published in 1862. The following exhibits the income and expenditure for the three years preceding that date:

	1859.	1860.	1861.
Income.....	$25,310,222 70	$25,979,088 42	$26,423,228 69
Expenditure..	20,803,217 30	22,173,900 68	26,490,219 50

Since the outbreak of the civil war the expenditure has far exceeded the revenues. It was stated in the Spanish cortes, Oct. 27, 1871, that the cost of the war during the preceding year had been $62,000,000, and that the colonial deficit for the same period was $11,000,000. Even in time of peace the greater part of the revenue is absorbed by the expenses of the army and navy.—In ordinary times there are stationed in Cuba, besides the disciplined militia and the militia of Ferdinand VII., 20,000 regular troops, who are either drafted or enlisted by bounty in Spain. This force has been much increased since the breaking out of the war. According to official data published in Madrid in 1870, the regular troops in Cuba amounted to 23,000, the expeditionary corps to 33,000, and the militia in active service to 4,000, making a total in the field of 60,000. Besides these there were 70,000 volunteers in garrison, who seldom went into the field. The Spanish navy in the Antilles is never less than from 25 to 30 vessels, carrying over 200 guns and 3,000 men. Since the outbreak of the war 30 light-draft gunboats, built in the United States, have been added to this fleet, to be used in guarding the coasts against filibustering expeditions, and other vessels for a similar purpose have been purchased as late as 1873. The active military force has been considerably decreased by sickness and by the casualties of war, but partial reënforcements from Spain are continually arriving.—For facility of exchange the government established in 1854 a bureau of discount (*caja de descuentos*), with a capital of $800,000, on the reserve of the treasury. It resulted in nothing, and was soon abandoned. In 1840 various companies were started by private capital, which discounted notes, received deposits, and loaned money on mortgage. The first was the Havana bank of savings, discount, and deposit. The Spanish bank was organized by a joint-stock company in 1856, with a capital of $3,000,000. It issued bills payable to bearer on presentation, and at first its issue was limited to a part of its capital; but it has increased to such an extent that its bills now represent several times the amount of its capital. It suspended specie payments in 1868. In 1871 it began to issue fractional bills to supply the deficiency of coin. Up to 1868 the acceptance of its bills was optional; since then it has been imperative, and any one who refuses them is regarded as an insurgent. Previous to the issuing of notes by this bank there was no circulating medium on the island but gold and silver.—Internal communication was formerly very difficult on account of the want of good roads, but has much improved since the introduction of railways, which were used in Cuba before they were in any other Spanish-speaking country, the first, that from Havana to Güines, having been opened in 1837. There are now (1873) 829 miles in operation in the island, comprising the following lines: Havana, from Havana to Union, 77 m., with branches from Güines to Matanzas, 36 m.; Sabana de Roble to Madruza, 4 m.; Rincon to Guanajay, 32 m.; San Felipe to Batabanó, 10 m.; the Marianao railway, from Havana to Marianao, 7 m.; railway of the bay, from Havana to Matanzas, 56 m., with a branch from Matanzas to Bemba, 44 m.; the Matanzas, from Matanzas to Baró, 68 m., with a branch from Navajas to Torriente, 16 m.; the Cardenas and Jucaro, from Cardenas to Navajas, 36 m., with branches from Bemba to Macagua, 45 m.; Cardenas to Palmillas, 51 m.; Macagua to Santo Domingo, 37 m.; to Itabo, 14 m.; the Western, from Havana to San Cristóbal, 63 m.; the Sagua la Grande, from Sagua to Las Cruces, 48 m.; the Puerto Principe, from Puerto Principe to Nuevitas, 52 m.; the Cienfuegos and Villa Clara, from Cienfuegos to Villa Clara, 51 m.; the Caibarien and Santo Espiritu, from Caibarien to San Andrés, 24 m.; the Santiago de Cuba, from Santiago to San Luis, 28 m.; the Cobre, from Santiago to Cobre, 11 m.; the Trinidad, from Casilda (port) to Trinidad, and Trinidad to Güines, 19 m. Among the projected railways are roads from Carahatas to Mallarquin, from Santo Espiritu to Sasa, and from Gibara to Holguin and Manzanillo. These roads are all controlled by private companies. The first steamboat in Cuba was taken to Havana by Don Juan O'Farrell, a planter of Irish descent, who purchased it almost as soon as steam was applied to navigation. Steamers now ply between Havana and all the chief ports on the coast and the other West India islands. There is also a mail steamship line to Cadiz twice a month, and lines to New York, New Orleans, Baltimore, Southampton, Liverpool, Havre, Hamburg, and the ports of Central America. The first telegraph line was built in 1852. The submarine cable between the island and Florida was laid in 1867–'8, and that to Jamaica in 1870. The latter is connected with other West India islands. A third cable, laid in 1871, connects Batabanó and Santiago de Cuba.—Cuba was discovered by Columbus, Oct. 28, 1492. It is generally thought that he entered the island near Nuevitas, on the N. coast, by the river Maximo. He believed that it was a part of the continent, but later, in a letter to Sanchez, he accepted the opinion of the Indians and called it an island. On his return to Cuba,

however, he reaffirmed his previous belief, and had a report drawn up and published in order that his opinion might be set down in due form. He gave to his new discovery the name of Juana, in honor of Prince Juan, the heir of his royal patrons. It was subsequently called Fernandina, after the death of Ferdinand, and still later Santiago and Ave Maria; but none of these names supplanted that of Cuba, by which it was known to the natives. The island was thickly populated by a docile race of Indians, who extended to all the large West India islands and the Bahamas. They called themselves by the general name of Tainos, the Good, but the Cubans were known specifically as Ciboneyes. In 1511 Diego Velasquez, who had been appointed adelantado of Cuba by Diego Columbus, overran the island with 300 men. The natives, unable to cope with the invaders, were easily subdued, and Hatuey, their chief, who fell into the hands of the Spaniards, was burned at the stake near the present town of Yara. Baracoa, at the E. end of the island, was founded at this time, and in 1514 Santiago, which was made the capital, and Trinidad on the S. coast. In the same year a place on the S. coast, at the mouth of the river Ojicajinal, was settled and called San Cristóbal de la Habana; but the name was transferred to a new site on the N. coast, near where the river Marianao falls into the sea, and still later, in 1519, to the present locality. Velasquez also founded Bayamo, Puerto Principe, and Santo Espiritu. The natives were soon brought into complete subjection, and were allotted to the settlers as *encomiendas*, in gangs of about 300 to each Spaniard, who employed them in the cultivation of the soil, principally in the growing of sugar cane. They disappeared so rapidly under the cruel treatment which they received that in 1553 there were but few left. As early as 1534 the officials applied to the emperor for "7,000 negroes, that they might become inured to labor before the Indians ceased to exist." With the virtual extinction of the natives the agriculture of the island declined, and it became mainly a pastoral country. In 1537 Diego Columbus relinquished by agreement his right to appoint the government for Cuba, and the king made Hernando de Soto captain general. The *audiencia* (supreme court), which had been organized in Santo Domingo for the administration of justice, was soon transferred to Cuba (Puerto Principe), and a law was passed appointing the captain general the president of the court. The island was governed as one department up to 1607, when it was divided into two. All powers, civil and military, were vested in the captain general, who resided at Santiago, which was the capital till 1552, when Angulo removed it to Havana. All the governors had the title of captain general, although many of them were civilians, and their substitutes were called lieutenants general. In the early days the discovery of Mexico and other countries drained the island of its working population, and the government passed a law imposing the penalty of death on all who left. Other laws prohibited all foreigners, and even Spanish subjects not natives of Castile, from trading with the island or settling in it. The increase of population was therefore slow; the introduction of negroes was gradual, and growth was almost stopped. After the capture of Jamaica by the English, in 1655, smuggling was largely carried on. On the arrival of Governor General Valdez in the latter part of the 17th century, it was discovered that nearly all the Havanese were guilty of the crime of *rescate* or illicit trading, the penalty of which was death. At the suggestion of Valdez, a ship was freighted with presents for the king and sent to Spain with a petition for pardon, which was granted. Havana was destroyed by the French twice in the 16th century. In 1592 it received the title of city. During this century monastic institutions were introduced into Cuba, and in 1576 the inquisition sent a delegate thither. In 1631 there were six militia companies, armed with arquebuses and crossbows. Epidemics carried off many of the inhabitants in 1648 and 1654. The disease was called putrid fever, but many suspect it to have been yellow fever. The people of Cuba took sides in the dissensions that ensued on the death of Charles III., but through the efforts of Bishop Evelino de Compostela bloodshed was prevented and a peaceful triumph obtained for the partisans of Philip V. In 1717 a revolt broke out in consequence of the attempt to establish a tobacco monopoly. Governor Raja was obliged to flee, but the trouble was quelled, and the factory was set up; it continued until the beginning of the present century, when it was suppressed by Arango. In 1723 a second uprising took place, induced by oppressive government, and 12 of those implicated were hanged by the captain general Guazo. Printing was introduced about this time. Between 1724 and 1747 many ships were built at Havana, comprising 6 ships of the line, 21 of 70 to 80 guns each, 26 of 50 to 60 guns, 14 frigates of 30 to 40 guns, and 58 smaller vessels; in all, 125 vessels, carrying 4,000 guns. Since the latter date there has been little ship building there. During the present century the machinery of one steamer, the Sagua, was built at Sagua la Grande, and one war steamer and one merchant steamer were built in Havana. In 1762 Havana was taken by an English fleet and army under Lord Albemarle. The English retained the island only until July of the following year, but during that time over 900 loaded vessels entered the port of Havana, more than all the previous entries since the discovery. Prior to this period 60,000 slaves had been imported. From 1763 to 1789 the importation was about 1,000 a year. In the latter year the Spanish slave code was promulgated, and the slave trade, previously a monopoly, was made free, after which importations in-

creased largely. In 1763 the *Gaceta de la Habana* was started, and a post office department was established. In 1767 the Jesuits were expelled from Cuba, as from the rest of the Spanish dominions. Under the administration of Las Casas, which began in 1790, Cuba made rapid progress in commercial prosperity and in public improvements. He developed all branches of industry, fostered the patriotic societies, and permitted the establishment of newspapers. By his judicious government the tranquillity of the island was maintained during the time of the revolution in Santo Domingo. In 1808, when the royal family of Spain was deposed by Napoleon, the Cubans declared for the crown, and proved their loyalty by numerous voluntary subscriptions, by the publication of vehement pamphlets, and by sending their sons to fight. But scarcely any of the promises made to them were fulfilled. Since that time the island has been ruled by a succession of captains general from Spain, some of whom have tried to advance the interests of the people, but the most of whom have done little else than make fortunes for themselves. The government has been generally of the most oppressive character, and if the island has advanced in prosperity, it has been in spite of all the obstacles which mismanagement could invent. In 1825 the royal order of the *omnimodas* was sent to Cuba, but it was not ratified till 1836; it empowered the captain general to rule at all times as if the island were in a state of siege. In March of the latter year a permanent military commission was established, which took cognizance of even ordinary offences, but particularly of all offences involving disloyalty. Previous to 1810 no one had ever been executed in Cuba for a political offence. In that year José R. Aleman, an emissary of Joseph Bonaparte, was hanged in Havana. In the years 1845 to 1847 the slave trade was nearly brought to an end through the energy of Captain General Valdez. But the increased consumption of sugar in Great Britain, in consequence of the reduction of duty, and the placing of foreign and British sugars on the same footing, afterward gave a new stimulus to the traffic. The efforts of the Spanish officials for its suppression were relaxed, and it attained a height greater than ever before.—There has been more or less discontent in Cuba since the beginning of the present century, but the project of annexation to the United States was not mooted until the French republic was proclaimed in 1848. The United States, after the acquisition of Florida, began to take a deep interest in the future of the island. Fears were entertained that it might fall into the hands of the English or French, and Spain and those nations were informed that such a disposition of it would never be consented to. Its contiguity to the coasts of the United States and its position at the entrance of the gulf of Mexico, surrounded by 12 different nationalities, give it an importance which could not be disregarded. The American government expressed its willingness that it should remain a Spanish colony, but averred that it would never permit it to pass into other foreign hands. On this principle the American government opposed the contemplated invasion of Bolivar, and urged Spain to make peace with the Spanish American republics in order to save Cuba from a change in her political and social system. In 1825 a proposition was made by Spain that in consideration of certain commercial concessions the United States should guarantee to her the possession of Cuba; but it was declined on the ground that such a course was contrary to the established policy of the United States. In 1848 President Polk authorized the American minister at Madrid to offer $100,000,000 for Cuba; but the proposition was rejected in the most peremptory manner. In 1849 Narciso Lopez, a native Venezuelan, but who had lived long in Cuba, where he had been in the Spanish military service, came to the United States with a number of Cubans, having been implicated in revolutionary movements. He represented the creole population as dissatisfied with Spanish rule and ready for revolt and annexation to the United States. Recruits were collected for a descent upon the island. The first expedition, in 1849, was defeated by the vigilance of the United States authorities. A second attempt was made in 1850, and a landing effected at Cardenas; but it resulted in failure, and the party were driven to sea. In August, 1851, Lopez sailed from New Orleans in a steamer with 500 men, and landed at Morillo in the Vuelta Abajo. The expected uprising of the people did not take place, many of his men were killed in the engagements, 50 captured with Col. Crittenden were shot in Havana, and the survivors, who with their leader had taken refuge in the woods, were soon made prisoners. Lopez was garroted in Havana Sept. 1; some others of his comrades were shot, but most of the survivors were transported and subsequently pardoned. In 1852 President Fillmore refused to join with France and Great Britain in a treaty guaranteeing to Spain the possession of Cuba. This rendered the Spanish government more alert in guarding against revolution within and expeditions from without, and led to occasional collisions with American citizens. The firing on the American steamer Black Warrior by a Spanish vessel of war, during the administration of President Pierce, threatened at one time to lead to hostilities. Since then the question of the acquisition of Cuba has entered frequently into American politics. In August, 1854, Messrs. Buchanan, Mason, and Soulé, United States ministers at London, Paris, and Madrid respectively, held a conference at Ostend and Aix-la-Chapelle and drew up a statement popularly known as the Ostend manifesto. In this document they argued that Cuba ought to belong to the United States, and that Spain would find its sale to be highly advantageous; and

that in certain contingencies, such as the emancipation of the slaves by the Spanish government, the United States ought to possess themselves of the island by force. A proposition was urged in the United States senate in the session of 1858–'9 to place $30,000,000 in the hands of the president with a view to the acquisition of the island; but after debate it was withdrawn by its author, Mr. Slidell of Louisiana. In the mean time the agitation of the question of independence still continued in Cuba, and suspected persons were arrested and imprisoned or banished without trial in the most arbitrary manner. In 1852 a conspiracy was discovered, and the leaders were condemned to death or to hard labor for life. In 1854 Gen. José de la Concha, in anticipation of an uprising of the creole population, threatened to Africanize the island. He formed and drilled battalions of black troops, armed the native-born Spaniards and disarmed the Cubans, and made ready for a desperate defence. His energy probably prevented a revolution at the time. The Cuban junta in New York had made preparations for a descent on the coast, and had enrolled a large body of men; but under the circumstances the attempt was postponed. Pinto and Estrampes, Cubans taken with arms in their hands, were executed, and about 100 others were condemned to the galleys or deported. Gen. Concha was created marquis of Havana for his services. For the succeeding ten years the island was comparatively quiet; but the party of independence was only awaiting an opportunity to strike. On Aug. 2, 1867, Francisco V. Aguilera, Manuel A. Aguilera, and Francisco Maceo Osorio met in the house of the last named in Bayamo, and formed a conspiracy to liberate Cuba from Spanish rule. A few months later their associates were so numerous that the leaders found it difficult to restrain them from striking prematurely. The revolutionary movement spread rapidly throughout the Eastern department. In Manzanillo Carlos Manuel de Cespedes placed himself at its head; in Holguin, Belisario Alvarez; in Las Tunas, Vicente Garcia; in Jiguani, Donato Marmol; and in Santiago de Cuba, Manuel Fernandez. These men met in September, 1868, to set a day for the rising. At this meeting all the deputies, with the exception of those from Manzanillo, insisted on the necessity of delaying action for at least six months, but no decision was arrived at. Another consultation was held on Oct. 3, at which Francisco Aguilera urged a delay of 16 days. His arguments were accepted as conclusive at the time, but two days afterward it was agreed definitively that the blow should be struck on Oct. 14. In the mean time news of the projected outbreak had reached Havana. On Oct. 9 a letter carrier was detained at Cespedes's sugar estate, La Demajagua, and found to be the bearer of an order for the arrest of the conspirators. Cespedes deemed it expedient to strike at once, and with only 200 badly armed men at his command he declared for independence on the field of Yara, Oct. 10. Yara was defended by a Spanish force too strong for the insurgents, but on the 13th attacks were made on Las Tunas, Cauto Embarcadero, Jiguani, La Guisa, El Datil, and Santa Rita. On the 18th Bayamo was captured; the governor shut himself in the fort with a few men, but capitulated on the 22d. A Spanish force under Col. Quiros, numbering about 800 infantry, besides cavalry and artillery, which had left Santiago de Cuba for the relief of Bayamo, was defeated and driven back to the former place with heavy loss. Camaguey soon followed the example of Yara. A republican form of government was organized, at the head of which were placed Salvador Cisneros Betancourt, marquis of Santa Lucia, and Ignacio and Eduardo Agramonte. On Nov. 25 Gen. Count Valmaseda, who had been sent from Havana into the insurrectionary district with the San Quintin regiment, set out from Puerto Principe for Nuevitas by rail, but was attacked on the following day and forced to return, leaving his dead on the field. Five days later he reached San Miguel, his force being harassed the entire distance. In December Col. Acosta y Alvear was defeated by the Cubans at Las Yaguas with heavy loss. Cespedes had proclaimed himself captain general in the Eastern department, and early in December a conference between the leaders in both departments was held at Guaimaro, but no consolidation was effected. Arrangements were made however to act in concert. Meanwhile Valmaseda, who was still at San Miguel, increased his force to 4,000 men and marched on Bayamo. He received a severe check at Saladillo, but finally succeeded in crossing the Cauto. The Cubans in Bayamo, seeing the hopelessness of defence, burned the city. On Dec. 26 Gen. Quesada landed a cargo of arms and took command of the army of Camaguey. The railroad between Nuevitas and Puerto Principe was cut by the insurgents, and the situation of the latter place became so critical that heavy reënforcements were sent thither from Havana. In October, 1868, Spain had 19,700 men of all arms in Cuba. Before the close of the year 20,000 additional troops had been sent from Europe, over 12,000 contra-guerrillas recruited on the island, and 40,000 volunteers organized for the defence of cities. The volunteers or national guard were raised from Spanish immigrants, between whom and the native Cubans has always existed a bitter jealousy and enmity. In 1873 they numbered about 60,000 in the whole island, and 11,000 in Havana. In January, 1869, they committed fearful atrocities at Havana, shooting men, women, and children in the Villanueva theatre, at the Louvre, and at the sack of Aldama's house. In February Gen. Dulce, successor of Lersundi as captain general, sent commissioners to the Cubans to open negotiations, offering them everything but independence, but met with no encouragement. On Feb. 26 the "as-

sembly of representatives of the centre" assumed its functions in Camaguey, and the first act of the new government was the abolition of slavery. In the same month the Villas district rose against Spanish rule; and the insurgents, who numbered over 7,000 men under Gen. Ruloff, a Pole, were successful in several engagements. A national convention was held at Guaimaro, April 10, at which were present Cespedes, chief of the provisional government of the Eastern department, the members of the Camagueyan assembly, the deputies from Villa Clara, and representatives from Santo Espiritu, Holguin, and Jiguani. A constitution was adopted. The republic was divided into four states, Oriente, Camaguey, Las Villas, and Occidente. Full legislative powers were given to the chamber of representatives, to which was intrusted the nomination of a president and of a commander-in-chief of the army. Both of these officers were to hold their position at the will of the chamber, which had the power to remove them without previous indictment. The flag adopted was the one which had been unfurled by Agüero and Lopez. On April 11 Cespedes was elected president and Manuel Quesada commander-in-chief. On April 18 a Spanish force of 200 men was surrounded and most of the number were killed or captured. Gen. Valmaseda had meanwhile issued a proclamation decreeing that every male over 15 years of age found in the country away from his home, without justifiable reason, should be shot; that every house on which a white flag was not displayed should be burned; and that all women and children found alone on their farms should be removed willingly or by force, either to Bayamo or Jiguani. In May two important landings were made in aid of the insurgents: one under Rafael Quesada, in Camaguey, of men, arms, and ammunition from the steamer Salvador; the other under Gen. Thomas Jordan, a graduate of West Point and an ex-officer of the confederate service, at Mayari, of 175 officers and men, arms and ammunition for 2,600 men, and 10 pieces of artillery, from the steamer Perit. The former reached the interior without resistance; the latter was attacked at Canalito and again at El Ramon, but repulsed the enemy and reached his destination. The command of the army of the Oriente was at once assigned to Gen. Jordan. Before the close of the year Gen. Quesada, having demanded extraordinary powers, was deposed by congress, and Gen. Jordan appointed commander-in-chief. On Jan. 1, 1870, the latter defeated a Spanish force under Gen. Puello at Las Minas de Guaimaro. In August of the same year the United States government offered to Spain their good offices for a settlement of the strife. Terms for the cession of the island to the Cubans were proposed by Mr. Fish, the United States secretary of state; but Spain declined the offer. The volunteers having in July expelled Capt. Gen. Dulce, Gen. Caballero de Rodas was sent from Spain to replace him, together with a reënforcement of 30,000 men. In December De Rodas was superseded by Valmaseda at the dictation of the volunteers. On Nov. 27, 1871, eight medical students were condemned by a court martial of volunteers for alleged desecration of the grave of a Spanish editor, and shot. In December Valmaseda issued a proclamation giving notice that every insurgent taken after Jan. 15, 1872, would be shot, and all surrendering after that date be sentenced to perpetual imprisonment. In 1872 Valmaseda was replaced *ad interim* by Ceballos, and in 1873 definitively succeeded by Gen. Pieltain, who in July, 1873, sent to President Cespedes to offer peace on condition that Cuba should remain a state of the Spanish republic; but the offer was declined. In November, 1873, Gen. Pieltain was superseded by Gen. Jovellar; and in December Cespedes was deposed from the presidency of the Cuban republic and succeeded by Salvador Cisneros. There have been sent to Cuba from Spain since October, 1868, 80,000 soldiers, of whom not more than 12,000 survive. According to official reports forwarded from Madrid by the United States minister, 13,600 Cubans had been killed in battle up to August, 1872, besides 43,500 prisoners whom the Spanish minister admitted to have been put to death. In the first three years of the war, up to October, 1871, Spain had expended, according to official statements, $70,339,658 70. No authentic statement has been made since.

CUBE (Gr. *κύβος*, a die), in geometry, a solid body terminated by six square equal faces; occupying among bodies a place analogous to that of the square among surfaces. The problem of the duplication of the cube, or of constructing a cube of twice the volume of a given cube, is celebrated in the history of science. It occupied geometers in the time of Plato; and it was a Greek tradition that once during a pestilence the priestess at Delos had responded that in order to appease the gods her altar must be doubled. The altar was cubical, and a new one was built whose sides were of twice the dimensions of the old one. The priestess responded that her command had been wrongly interpreted, and from that time the geometrical duplication of cubic figures was a constant problem, like the quadrature of the circle. The cubature of solids, or the reduction of any body to a cubic form of equal volume, is performed by first reducing the given volume to one of the geometrical figures the law of whose curvature is known, as the parallelopipedon, cylinder, cone, or sphere.—In arithmetic and algebra, a cube is a number formed by raising another number to its third power; thus, 27 is the cube of 3, being equal to $3 \times 3 \times 3$. The number which is thus multiplied to make a cube is called the cube root.

CUBEBS, the berries of *piper cubeba*, a plant growing wild in Java, Penang, and probably other parts of the East Indies. The berries

are hard, round, blackish, stalked, and veined, with an aromatic taste and smell. They contain a volatile oil and a hard and soft resin. The latter may be regarded as cubebic acid, and



Piper cubeba.

seems to be the active medicinal constituent. It passes into the urine and imparts to it a peculiar odor, when taken in doses of 10 grains every two hours; in larger doses it increases the quantity of the urine and causes irritation of the urinary passages. Cubebs modify the secretions of all the mucous membranes, but act especially on those of the urinary passages. They are accordingly used in the treatment of those membranes. The diseases in which they are commonly employed are gonorrhœa, gleet, leucorrhœa, chronic inflammation of the bladder, and chronic bronchitis. When the latter affection is attended with profuse expectoration and debility, the administration of cubebs is often followed by the happiest results. Acute inflammation of the mucous membrane, whether bronchial or urinary, contraindicates the use of cubebs. They may be administered in the forms of powder, oleoresin, which is another name for the fluid extract of cubebs, oil, and tincture. One to three drachms of the powder may be given three times a day. The dose of the fluid extract is from a few drops to a drachm; of the oil, 10 or 12 drops; of the tincture, from half a drachm to one or two drachms. All of these preparations are most agreeably taken when mixed with some thick sirup or mucilage. Cubebs enter into many of the bronchial lozenges or troches that are sold for the relief of bronchitis, coughs, &c.

CUBIT (Lat. *cubitus*, the elbow), an ancient measure, taken from the human arm as measured from the elbow to the end of the middle finger. Its length was in practice somewhat indefinite and varied among different nations. According to the most recent investigations, the Roman cubit was 17½ inches, and the Hebrew cubit less than 22 in., the different measurements varying from 20·24 to 21·888 in. The measurements of the Egyptian cubit vary from 20·472 to 20·748 in.; that on the Nilometer at Elephantine is 20·625 in.

CUCKING STOOL, an instrument formerly used in Great Britain for the punishment of persons whose conduct made them specially obnoxious to the public. It consisted of a stool or chair in which the offender was placed in front of his own door, and subjected to the insults and peltings of the mob. Extortionate or dishonest brewers and bakers were sometimes compelled to submit to this punishment, and for common scolds the chair was attached to the end of a long beam, by means of which the offender was ducked under water; hence the instrument came to be designated ducking stool. It was also sometimes called tumbrel, trebucket, and castigatory. Scolding wives continued to be punished in this manner in England up to the beginning of the present century.

CUCKOO (*cuculus*, Linn.), a genus of birds of the order *scansores* and family *cuculidæ*, inhabiting the temperate and warmer regions of the old world. The cuckoos of America belong to another subfamily of the same order. The true cuckoos, as exemplified in the genus *cuculus*, have the bill broad, rather depressed at the base, curved, gradually compressed to the acute tip; the nostrils are round and exposed; the wings are long and pointed, the third quill being the longest; the tail is long and graduated, or even, and the outer feather of each side is shorter than the others; the tarsi are very short and partially feathered; the toes, two before and two behind, are unequal, the outer anterior one being the longest, and united to the inner at the base. More than 40 species are well determined, of which the best known and most interesting is the common



European Cuckoo (Cuculus canorus).

European cuckoo (*C. canorus*, Linn.). In this bird the corners of the mouth and eyelids, and the inside of the mouth, are of an orange color; the plumage of the head, neck, breast, and

upper parts, is a deep bluish gray; the under parts and the axillary feathers are white with distinct black bars; the quills are blackish gray, the inner webs with transverse white bars; the tail is darker, approaching to black at the end, and often with a green gloss, tipped with white, and each feather marked along the shaft with triangular white spots, which, meeting similar spots on the outer feathers, give an almost barred appearance to the tail; the feet are gamboge-yellow, and the bill black. The length of the bird is 14 in., and the extent of wings 25 in. The young birds are of a brown tint, with reddish brown bars and white markings, the white of the under parts being barred with black. The female very closely resembles the male. The cuckoo is associated with the return of sunny skies and the renewal of vegetation, and is a most welcome "messenger of spring;" it arrives from southern Europe in Great Britain in April, and generally departs in August. It is very generally distributed over Europe, decreasing in numbers toward the north; according to Temminck, it extends its migrations to northern Africa. The most singular habit of the cuckoo is that it deposits its eggs in the nests of other birds, leaving the care of the young entirely to the foster parents thus selected; the latter adopt the young cuckoo as their own, often to the destruction of their proper offspring, which are thrust out of the nest by the usurping stranger. The reason of this departure from the usual habit of birds is not well ascertained; it is common in the genus *cuculus*, and is also practised by our cow bird (*molothrus pecoris*, Swains.). (See Cow Bird.) The cuckoo selects the nest of a bird smaller than itself, and of a great variety of species, as the warblers, sparrows, finches, and larks, and in it deposits a single egg, very small compared to the size of the bird; it is believed by Montague and others that the female has the power of retaining the egg in the oviduct until she can find a nest suitable for its reception; she lays several in the course of the season. The young cuckoo is said to eject its companions from the nest by lifting them out on its shoulders; from this habit has arisen the German saying, "as ungrateful as a cuckoo." The well known notes of this bird, as heard in the breeding season, resemble very much its name; the song is loud and joyful, and confined to the males, and is silent before their departure. Its food consists of the larvæ of insects and caterpillars; before swallowing the latter it cuts off the hinder end and frees the body from the intestinal canal by repeated jerks with its sharp bill. The males are more numerous than the females, and are bold and fierce, and rarely kept as pets. In autumn they are fat and esteemed as food; the ancients were very partial to them, and their flesh was supposed to have valuable medicinal properties.—The American cuckoos belong to the subfamily *coccyzinæ*, or ground cuckoos, and to the genus *coccyzus*. In this genus the bill is long and rather slender, and curved; the nostrils are oval; the third and fourth quills are the longest; the tail is long, broad, and rounded on the sides; the tarsi are shorter than the middle toe, and naked; the toes are unequal, and the claws long, compressed, curved, and acute. Three species are described belonging to North and Central America, though a few stragglers have occasionally been seen in Europe; they are shy birds, frequenting the dense woods and solitary swamps. I. The yellow-billed cuckoo (*C. Americanus*, Bonap.) has a length of 12½ in., and an extent of wings of 16 in.; the bill is an inch long, for the most part yellow; the iris is hazel; the general color of the upper parts, with the wing coverts and two middle tail feathers, is light greenish brown, deeper anteriorly; the other tail feathers black, with a broad white space at the end of the three outermost, the fourth white on the outer web; the primaries have their inner webs brownish orange; the under parts are grayish white.



Yellow-billed Cuckoo (Coccyzus Americanus).

The female differs little from the male. Its notes resemble the word "cow, cow," repeated several times with increasing rapidity; hence one of its names, cow bird; it is also called rain crow and coucou. It is found in all parts of the United States, though nowhere in abundance. Its food consists of caterpillars, insects, wood snails, berries (especially the mulberry), and grapes; it sucks the eggs of other birds, and itself falls a victim to many species of hawks. Its flight is rapid, but the gait on the ground is very awkward; its favorite retreat is the thickest foliage. This bird builds its nest and rears its young in the usual manner; the flat nest is very simply composed of a few dry sticks and grass, on a horizontal branch of a low tree; the eggs are four or five, of a bright green color. It migrates southward, generally beyond the limits of the United States, as cold weather approaches, in flocks and high in the air; single birds begin to enter our borders early in March, arriving as far as New York early in May. II. The black-billed cuckoo (*C. erythrophthalmus*, Bonap.) is a lit-

tle smaller than the preceding species, from which it is also distinguished by its dark bill, a bare scarlet space around the eyes, and the browner tint of the under parts. The present species does not frequent the interior of deep woods, but prefers the edges of forests on the border of the sea and lakes. It feeds principally on shellfish and aquatic larvæ and insects; it is very fond of the small frogs so numerous after summer showers. Its flight is more rapid than that of the yellow-billed species; in other respects, as in its migrations, general habits, and manner of constructing its nest, it much resembles the last named bird, and has frequently been mistaken for it. The eggs are greenish blue. III. The mangrove cuckoo (*C. minor*, Cab.) is 12 in. long and 15 in. in extent of wings; the general color of the upper part is light greenish brown, the head tinged with gray; primaries umber-brown; tail feathers, excepting the two middle ones, brownish black with white tips; the under parts brownish orange. In other characters it much resembles the yellow-billed cuckoo. Its habits are the same as those of the other species; it feeds on insects, fruits, and the eggs of other birds; it is vigilant and shy, not extending its migrations northward beyond Florida; it prefers the mangrove-covered islands, building its nest amid their dark foliage. The flight is rapid and elevated during migration. The female is paler than the male, especially on the lower surface, which is grayish.

CUCUMBER (*cucumis*, Linn.), a genus of cucurbitaceous plants, to which likewise belongs the melon, having annual fibrous roots, brittle climbing stems, rough, unequally divided leaves, and tendrils formed of the abortive stipules. The cucumber is thus a sort of gourd, represented in its real type, better perhaps, by the colocynth gourd, a bitter, powerfully purgative species, known as *C.* (*citrullus*) *colocynthis* (Persoon). These plants are to be placed between the myrtles and passion flowers; to the latter, indeed, they are so closely allied that they scarcely differ except in some particulars of structure, their habit being the same. It has been conjectured that long continued cultivation has done much toward ameliorating the bitter and dangerous properties of this group of plants; for several allied kinds in their wild state, it is known, have proved deleterious. All the numerous cultivated varieties of the melon and cucumber are delicious or wholesome fruits. The writer has raised cucumbers from seeds received from the East Indies, which looked like the common cucumber, only smaller; they were so intensely bitter as to be worthless; and the stem end of the better sorts of garden cucumber is frequently bitter. The drastic property is strong in many of the allied genera from Brazil, and in the squirting cucumber it exists in concentrated virulence. The common cucumber (*C. sativus*, Linn.) is a native of tropical Asia. In cultivation it requires a deep and rich soil, an abundance of moisture, and continued heat. If planted late enough to escape the frosts, it will grow with scarcely any care. It is subject, however, to the depredations of numerous in-



Common Cucumber (Cucumis sativus).

sects. The best way to prevent these is to cover the young plants with boxes having gauze tops, until the foliage is large and abundant. The cucumber loves to support itself by its tendrils in an upright position upon pieces of brushwood, and the cleanest and best fruit is thus obtained. This will be found to be a good practice, too, where there is but little room for horizontal growth. As an early vegetable, scarcely any plant can be so successfully forced in the hot-bed; but the best sorts should be selected for the purpose. Great skill oftentimes is requisite to keep the plants vigorous



Squirting Cucumber (Momordica elaterium).

and healthy, and to sustain an unchecked growth. Besides affording a palatable and cooling salad, the cucumber has been used in medicine for pectoral complaints and as a febrifuge.

Its expressed juice is employed as a cosmetic; and it is said to give a pleasant suppleness to the skin. It enters into the composition of some of the French pomades. Cucumber ointment is prepared by stirring and beating successive portions of the juice of green cucumbers with melted lard and veal suet, then draining off the watery portion and melting and straining the ointment. Its action is soothing and emollient. It is often applied to sore nipples and excoriations. — The squirting cucumber (*momordica elaterium*, Linn.; *ecbalium agreste*, Pritch.) grows in waste places in S. Europe, and is cultivated in England. Its fruit, when nearly ripe, separates from the stalk and ejects its seeds and juice, from which is derived a powerful drug. (See ELATERIUM.)

CUDBEAR, a dyestuff prepared from several lichens, but principally from *lecanora tartarea*, which also furnishes the litmus cakes of the Dutch and the archil paste of the English. It is obtained from the lichens in the same manner as these dyes, but toward the end of the process it is dried in the air and pulverized. The name is a corruption of Cuthbert, from Dr. Cuthbert Gordon, who patented the mode of preparation. It is used, like archil, for giving to woollens and silks a great variety of colors, but has no affinity for cotton.



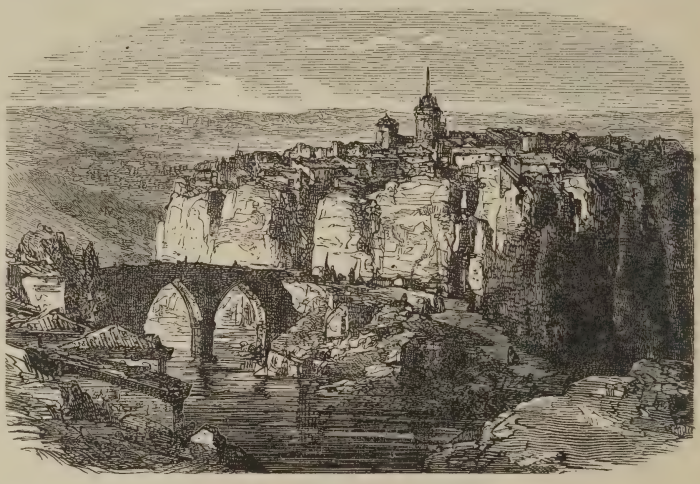
Lecanora tartarea.

CUDDALORE, a town of Hindostan, in the Carnatic, on the Coromandel coast, and on the right bank of the estuary of the Punnair, 100 m. S. S. W. of Madras and 17 m. S. S. W. of Pondicherry; pop. about 30,000. The town, one of the largest in S. India, is laid out in broad regular streets, and has many good houses; and there is considerable trade, principally in the cotton cloths produced in the district. The site of the town is low, being not more than five feet above the sea, but is not unhealthy. It is a station for soldiers who have been invalided. Cuddalore has frequently changed masters. It was acquired by the East India company in 1681, taken by the French in 1758, and retaken by Sir Eyre Coote in 1760. In 1782 the French, with the assistance of Hyder Ali, recaptured it, strengthened the works, and placed a strong garrison in them. The British under Gen. Stuart attacked it the following year, but were repulsed. In 1795 it was restored to the East India company.

CUDDAPAH, or **Kurpa.** **I.** A district of Hindostan, in the presidency of Madras, between lat. 13° 5′ and 16° 20′ N., lon. 77° 48′ and 79° 50′ E., bounded N. by Kurnool and Guntoor, E. by Nellore and N. Arcot, S. by N. Arcot and Mysore, and W. by Bellary and Kurnool; area, 12,900 sq. m.; pop. in 1872, 1,343,762. It is traversed from N. to S. by a range of mountains connecting with the Eastern Ghauts, and is drained by the Pennar and its tributaries. The climate is very enervating for Europeans, being very hot during the day, and the air close and stagnant at night. Forests are few, and wild animals are not numerous. Cotton, wheat, and indigo are largely cultivated. On the Pennar, about 7 m. N. E. of the town of Cuddapah, are diamond mines which have been worked for centuries, but of late they have not been profitable. Iron ore abounds, and soda, saltpetre, and common salt are found in large quantities. Cuddapah came into possession of the East India company in 1800 by treaty with the Nizam. **II.** A town, capital of the district, situated on the Bogawunka, a small affluent of the Pennar, 140 m. N. W. of Madras, in lat. 14° 32′ N., lon. 78° 55′ E.; pop. from 10,000 to 15,000. It was once a place of great consequence and the capital of an independent Patan state; but most of its public buildings are now in ruins, and the greater part of the houses in the native town are mud huts. Its chief importance consists in its military station, 3 m. E. of the town on the opposite bank of the river.

CUDWORTH, Ralph, an English divine and philosopher, born at Aller, Somersetshire, in 1617, died in Cambridge, June 26, 1688. At the age of 13 he was entered at Emmanuel college, Cambridge, in which he afterward became fellow and tutor. In 1641 he was presented to the rectory of North Cadbury, and in the next year published a sermon on the true nature of the Lord's supper, which attracted the notice of several learned writers. In 1645 he was appointed regius professor of Hebrew, in which office he continued 30 years. After a short absence from Cambridge, caused by pecuniary embarrassments, he returned in 1654, when he was elected master of Christ's college. His subsequent preferments were a vicarage of Ashwell in 1662, and a prebend of Gloucester in 1678. In performing the duties of his professorship he devoted much attention to Hebrew literature and antiquities, and he was one of the persons consulted by a committee of parliament concerning a new translation of the Bible. In 1678 he published his great work, which had been written several years before, entitled "The True Intellectual System of the Universe," the epithet "intel-

lectual" being intended to contrast it with any physical theory, as the Ptolemaic or Copernican. The design of the work was to establish human liberty against the fatalists, and it was to consist of three parts: the first being a refutation of atheism and atheistic fatalists; the second, of those who admitted a Deity, yet acting necessarily and without moral perfections; and the third, of those who granted the moral attributes of God, but affirmed that human actions are governed by necessary laws ordained by him. Only the first part was completed, and the "Intellectual System" consists of a most erudite argument against atheistic fate. To account for the operation of physical laws without the continued agency of Deity, he devised the theory of a plastic nature, which he treats as a real being, giving it "a drowsy unawakened cogitation," and which he makes the immediate and obedient instrument in the execution of divine purposes. He also reviewed the systems of ancient speculation in order to show that a belief in one sovereign and omnipotent God underlay the polytheistic views of the pagan nations. Dr. Cudworth left several large ethical and theological works, which still remain in manuscript in the British museum. His "Treatise concerning Eternal and Immutable Morality" was first published by Bishop Chandler in 1731. Its design is to prove that moral differences of right and wrong are antecedent to any divine law, and it was probably a partial accomplishment of the second division of his proposed "Intellectual System." Cudworth was one of the most eminent of several Cambridge divines who were termed Latitudinarians; and his clear and fearless statements of the arguments of his opponents caused him to be accused of heterodoxy, and of raising "so strong objections that he did not answer them." The "Intellectual System" was republished in London in 1743, in 1820, and in 1845; the last edition is in 3 vols., and contains translations of the valuable notes of Dr. Mosheim. Several editions of his "Complete Works" have been published in the United States.



Cuenca.

CUENCA. I. A province of Spain, in New Castile, bordering on the provinces of Guadalajara, Teruel, Valencia, Albacete, Ciudad Real, Toledo, and Madrid; area, 6,722 sq. m.; pop. in 1867, 242,231. It is one of the most mountainous provinces S. of the Ebro. The principal rivers are the Jucar, its affluent the Cabriel, and the Guadiela, an affluent of the Tagus. The products are timber, excellent honey, several minerals, oil, fruit, hemp, flax, and grain, and wine in the S. W. part. The principal exports are saffron and a superior quality of wool. Only one sixth of the soil is cultivated, and most of the remainder is pasturage. There are several medicinal springs in the province. The woollen industry, for which it was renowned in former times, has much declined. It has no town considerable for its population or trade. **II.** The capital of the province, one of the most picturesque towns of Spain, about 3,400 ft. above sea level, between the heights of San Cristóbal and Socorro, at the confluence of the Huescar and Jucar, 85 m. S. E. of Madrid; pop. about 7,000. Once celebrated for arts, literature, and industry, it is now remarkable only for its Moorish aspect, its cathedral, and its scenery. Beautiful forests, called *los pinares de Cuenca*, adjoin the town, as well as many lakes and streams. Near the cathedral is the bishop's palace. Besides a number of churches, the city contains three hospitals, three colleges, and a clerical seminary. The most remarkable bridge of Cuenca is that of San Pablo over the Huescar. The town is surrounded by high old walls, and has woollen factories, paper mills, and establishments for washing wool.

CUENCA, or **Rambae,** a city of Ecuador, capital of a province of the same name, in the department of Asuay, 65 m. S. E. of Guayaquil and 175 m. S. S. W. of Quito; lat. 2° 55′ S., lon. 79° 13′ 15″ W.; pop. about 32,000. It is built in a beautiful plain in the valley of Yunquilla, more than 8,000 ft. above the level of the sea, which is well watered by irrigating canals leading from neighboring rivers. The city is regularly laid out, with broad, straight streets, but the houses are mostly low and mean in appearance, being built of adobe bricks. It is the see of a bishop, and has a cathedral, two

parish churches, a Jesuit college, four convents, a hospital, a governor's residence, chamber of finance, prison, and other public edifices. There are also extensive sugar refineries and manufactories of cotton cloths, hats, pottery, confectionery, and of a cheese resembling Parmesan. The trade, besides these manufactures, is chiefly in grain and cinchona bark. The climate is agreeable, and the surrounding country produces the various cereals, sugar, cotton, and cochineal. Gold, silver, copper, mercury, and sulphur are found in the vicinity. In the environs are many notable Indian ruins, among which is the great highway of the incas. South of the city is the mountain of Tarqui, which was selected by La Condamine, Bouguer, and Godin, in 1742, for establishing their meridian line. In 1828 the battle of Tarqui, between the armies of Colombia and Peru, was fought near Cuenca.

CUEVA, Juan de la, a Spanish poet, born in Seville about 1550, died about 1608. He wrote several dramas on national subjects; an epic (*La conquista de la Betica*, printed in 1603) on the conquest of Seville by St. Ferdinand, an unsuccessful imitation of Tasso's "Jerusalem Delivered;" and over 100 ballads (*Coro Febeo de romances historiales*, Seville, 1587–'88), mostly taken from the histories of Greece and Rome, and only four or five from that of Spain. His fame rests more particularly upon his having been the first Spaniard to attempt didactic poetry; his poem, entitled *Egemplar poetico*, which he wrote in 1605, but which was first printed in 1774 in vol. viii. of the *Parnaso español*, being the earliest and most original effort of the kind in Spanish.

CUFAH. See CUFIC INSCRIPTIONS.

CUFFEE. I. Paul, a native Indian preacher of the Shinnecock tribe of Indians on Long Island, born in 1757, died March 7, 1812. He was for 13 years in the employ of the New York missionary society, and was regarded as an able preacher. He was a successor of the Rev. Samson Occom and the Rev. Peter John. **II. Paul,** a negro sea captain, born on one of the Elizabeth isles, near New Bedford, Mass., in 1759, died Sept. 7, 1818. His father was a native of Africa, and once a slave; his mother was of Indian extraction. He accumulated a handsome fortune in seafaring pursuits, and for many years commanded his own vessel, having a crew composed entirely of negroes, and visiting many American and foreign ports. He was an esteemed member of the society of Friends. It is related that on one occasion, when the custom house officer of Norfolk, Va., refused him a clearance because he was a negro, he proceeded at once to Washington to submit his case to President Madison, with whom he was well acquainted. "James," said he to the president, "thy customs collector at Norfolk refuses me my clearance; I wish an order from thee which shall compel him to give it me." Madison inquired into the circumstances, and wrote the required order. In the latter part of his life Cuffee encouraged the emigration of free people of color to Sierra Leone. He corresponded with prominent friends of that enterprise in Great Britain and Africa, and in 1811 visited the colony in his own vessel to determine for himself its advantages. In 1815 he carried out to Sierra Leone 38 colored persons as emigrants, 30 of them at his own expense, and on his arrival there furnished them with the means of subsistence, spending in this enterprise nearly $4,000. He was anxious to carry other companies of emigrants; but while waiting for the permission of the British government, American vessels being at that time excluded from the trade of the British colonies, he was seized with the illness which terminated his life.

CUFIC INSCRIPTIONS AND COINS have their name from Cufah, a city of Irak-Arabi, on the Nahr-Cufah or Euphrates, in the pashalic of Bagdad. Cufah was built under Omar, the second caliph, after his capture of Modain, the capital of Sassanidic Persia. It was the residence of Ali, the fourth caliph, and a century later of Abul Abbas, the founder of the Abbasside dynasty; it also possessed a celebrated school. After the foundation of Bagdad by Al-Mansoor, the second Abbasside, Cufah was neglected and began to decay. In the time of Mohammed the Arabs of Hedjaz used a writing similar to the Neskhi, which may be seen in some papyri in the *Mémoires* of the French academy and in the "Asiatic Journal." According to Arabic tradition, writing at that time was newly invented and in little use. Whether the Arabs of Yemen, Irak, Mesopotamia, and central Arabia had derived their writing, much earlier, from the Phœnician, or Palmyrean, or Sassanidic, is not ascertained. The Cufic, or properly Kiufi, however, is probably derived from the Syrian *estranghelo* (στρογγύλος, round). It is coarse, stiff, angular, and not so distinct as the modes of writing derived from it. It consists of 18 forms of letters, 8 of which, by being marked with diacritic points, represent 10 sounds of the modern Arabic writing (these we include in parentheses), namely: *a*, *b*, (*t*, *th*), the English *j* (*h*, *kh*), *d* (*dh*, the English *th*, as in *this*), *r* (*z*), *s* (*sh*), *ss* (*dz*, Spanish *c* in *célebre*), *t*, *ain* (*ghain*, both peculiar gutturals, or rather faucals), *f*, *k* harsh, *k* soft, *l*, *m*, *n*, *h* (or merely the *spiritus lenis*), *u*, *i* or *y* (German *i*, *j*). In manuscripts, the vowels are sometimes marked with red or yellow points. This writing was used in manuscripts for about three centuries; on coins and sepulchral monuments and in titles of books, for about seven centuries after Mohammed. Even now the writing of the African Arabs and Moors resembles the Kiufi; while the orientals, who are very fond of flowing, elegant, slender letters, use, especially for copying, the Neskhi, whose introduction is attributed to Ibn Mokla, in the fourth century of the Hegira. There

are also many other modifications in Persian, Turkish, Hindostanee, and Malay chirographs. —Cufic characters are found on the coins of almost all Mohammedan nations. The coins of the earlier rulers are mostly without an effigy, and ill-stamped; but the most celebrated ones show the face of the ruler, although this is anti-Mohammedan; and those of later times exhibit either a sign of the zodiac or stars, or the heraldic sign (*tamgha*) of the Turkish sovereigns. The inscriptions on the coins contain the name of the potentate by whom they are issued, the year of coinage, &c., and most frequently the phrase, "Coined in the name of Allah," either around or on the edge, and sometimes in two lines. The form is, on the whole, either Byzantine or Persian, in the style of Nushirvan or Chosroes I., and of Parviz or Chosroes II., both Sassanides. The dates of these coins extend from the Ommiyades, who ruled at Damascus from 661 to 750, down to the emirs of Ghuzni, who bore sway in Turkistan, Persia, and India as late as the 12th century; most of them, however, belong to the 10th century of our era. Those of gold are called *dinar;* those of silver, *dirhem;* those of bronze or copper, *fuls.* Of some only halves and quarters of the original pieces now exist. The inscriptions are in several languages, some in two at once, some even in Arabic and Russian. They are found in Africa and Asia, from the Caspian and Euxine to the Baltic, in Pomerania, Brandenburg, &c., where they have been brought by commerce; and they are also met with in Spain, Naples, Sicily, &c. Glass medals are also found bearing Cufic inscriptions on either face or on both; they are about a quarter of an inch thick, and some have a higher margin on one side than on the other. These probably belong to the Fatimite dynasty of Egypt; and some of them come down to the Mameluke sultans (1766). It is uncertain whether they were current as money.—See G. C. Adler, *Museum Borgianum* (Altona, 1780); Sylvestre de Sacy, *Mémoires de l'académie française;* Lindenberg, *Sur quelques médailles coufiques et sur quelques MSS. coufiques* (Copenhagen, 1830); Möller, *Orientalische Paläographie* (Gotha, 1844); and other treatises, especially those of Fraehn, published at Kazan and St. Petersburg, and more recently those of Dorn, Stickel, De Saulcy, Olshausen, and Loret.

CUJAS (CUJACIUS), **Jacques,** a French jurist, born in Toulouse about 1522, died in Bourges, Oct. 4, 1590. He was the son of a tanner, and was educated at the university of Toulouse; spent several years in acquiring a knowledge of law, and of ancient languages, history, grammar, philosophy, mathematics, and poetry; and at the age of 25 commenced a course of instruction on the Institutes of Justinian. In 1554 the professorship of Roman law in the university of Toulouse became vacant, and Cujas, not being chosen to it, left Toulouse, and accepted a vacant chair at Cahors; but in 1555 he repaired to Bourges, then perhaps the chief seat of the study of civil law. The jealousy of rival professors having forced him to leave this place, he went to Paris, and published a portion of his works, including the *Observationum et Emendationum XXVIII libri*, which, in the hyperbolical language of the time, received the name of *opus incomparabile, opus divinum.* In 1557 he was invited to fill a chair in Valence, whence in 1560, one of his rivals in Bourges being dead, he was called to that city, and there his principal works were published. In 1566 he went to Turin to lecture in the university, and in 1567 returned to France, fixing his residence at Valence. In June, 1577, he finally returned to Bourges, which he never afterward quitted. The latter part of his life was clouded by domestic cares and by distress at the unhappy condition of his country. After the assassination of Henry III. in 1589, the league, who were powerful in Bourges, endeavored to extort from Cujas a written opinion in favor of the claims of Cardinal Bourbon to the succession. He refused, exclaiming, "It is not for me to corrupt the laws of my country." He died soon after, broken-hearted, it is supposed, at the evils which preyed upon France. The jurists of Europe agree in considering him the greatest, as he was among the first of modern interpreters of the civil law. Besides the Institutes, Pandects, &c., of Justinian, he published, with explanations, a part of the Theodosian code, the *Basilica*, a Greek version of the laws of Justinian, and commentaries on the *Consuetudines Feudorum*, and on some books of the Decretals. His "Observations and Corrections," extending not merely to books of law, but to a number of Greek and Latin authors, have been of great value to philologists. The edition of Fabrot (10 vols. fol., Paris, 1658) was the first complete collection of his writings; but the reprints at Naples, Venice, and Modena, in 1758–'83, in 11 vols. folio, and at Prato in 1836–'47, in 13 vols. 8vo, contain important additions. Cujas was also distinguished as a teacher. In 1850 Toulouse erected a statue to him.

CULDEES, or **Keldus,** a religious fraternity who at one time were spread over the greater part of Great Britain and Ireland. The name appears to be of Celtic origin, a corruption of *Ceile De*, which in the Irish language signifies an "attendant of God." Others derive it from the Lat. *cultor Dei*, "worshipper of God." Their history has been raised to importance by certain modern writers, who claim that in the 2d or 3d century they were the priests of a Scottish Christian church which had no bishops, and resembled the Presbyterian organization. But the most recent investigations render it probable that they differed in no material point from the other clergy of Great Britain. Dr. Reeves, in the proceedings of the royal Irish academy for 1860, has given the best account of the Irish Culdees, and Mr. Grub, in his "Ecclesiastical History of Scotland" (Aber-

deen, 1861), of the Scottish. The order became extinct early in the 17th century.

CULIACAN, a city of Mexico, capital of the state of Sinaloa, on the left bank of a river of the same name, in lat. 25° 10′ N., lon. 107° 59′ W., 160 m. W. N. W. of Durango; pop. 10,000. It is surrounded by a well watered and productive country; and there are rich gold and silver mines in the vicinity, which are worked with considerable success. The city has regular streets and a fine public square surrounded by a colonnade. Among its principal buildings are a large cathedral, decorated with good paintings, a mint erected at a cost of $350,000, and a splendid club house. It occupies the site of the Aztec city of Hucicolhuacan, famous in Mexican history.—The river Culiacan, about 200 m. long, flows circuitously to the gulf of California, in lat. 24° 50′ N. At its mouth is the little town of Altata, the port of Culiacan. Nicaragua wood is exported.

CULLEN, Paul, an Irish Catholic prelate, born in the county Kildare, April 27, 1803, died in Dublin, Oct. 24, 1878. At an early age he entered the college of the Propaganda at Rome, where after his ordination he was appointed professor of Hebrew. He had been for several years rector of the Irish college when Pius IX. (1848) fled to Gaeta; and, as all the rectors of colleges in Rome who were not foreigners had to leave the city, Dr. Cullen was charged temporarily with the care of their establishments. He showed remarkable tact and firmness in dealing with the republican authorities, and saved both the Propaganda and the Roman college in a critical moment by placing them under the protection of the American flag. The primatial see of Armagh having become vacant by the death of Archbishop Crolly, and the suffragans failing to agree in the choice of his successor, Pius IX. nominated Dr. Cullen to the post. Consecrated Feb. 24, 1850, he went to Ireland with the title of delegate apostolic added to that of primate. He immediately set to work to secure for the Catholics of Ireland a system of primary and secondary education which might preserve the pupils from proselytism, calling a synod at Thurles, in which effectual measures were adopted for the foundation of a Catholic university. In 1852, on the death of Archbishop Murray, Dr. Cullen was translated to the see of Dublin, thus losing the primatial rank inherent in the see of Armagh, but confirmed for life in his position of delegate apostolic, which placed him at the head of the Irish hierarchy. This change was made to enable him to carry out his plans for the establishment of the Catholic university of Dublin, and to this work he bent himself. Property in the city was purchased, and in 1854 the university courses were opened under the presidency of John Henry Newman; and a new university building was commenced at Drumcondra, the archbishop of New York preaching on the occasion of the laying of the corner stone, July 20, 1862. In June, 1866, Dr. Cullen was created cardinal; and in October, 1867, the archbishops and bishops of Ireland met in Dublin under his presidency as delegate apostolic, and published resolutions declining all help from the state and condemning mixed education and secret societies. In the council of the Vatican Cardinal Cullen was conspicuous as an advocate of papal infallibility. He was the first bishop of Irish birth who had been raised to the cardinalate since the reformation, and the first cardinal among the countless prelates educated in the college of the Propaganda.

CULLEN, William, a Scottish physician, born in Hamilton, Lanarkshire, April 15, 1710, died near Edinburgh, Feb. 5, 1790. He studied medicine at the university of Glasgow, and at the same time served an apprenticeship to a surgeon apothecary of that place. At the age of 19 he procured the berth of surgeon on a merchant ship in the West India trade, and in 1732 returned to Scotland. While he was practising at Hamilton, William Hunter became his pupil under an agreement of ultimate partnership, which was broken off by Hunter's settling in London in 1741. In 1745 Cullen took up his residence in Glasgow, and in the succeeding year commenced a course of lectures in the university on the theory and practice of medicine. In 1751 he became professor of medicine, and lectured on chemistry, materia medica, and botany, giving much attention to the application of chemistry to agriculture and the useful arts. In 1756 he removed to Edinburgh to assume the chair of chemistry, and Thomson, in his "History of Chemistry," speaks of Cullen "as the true commencer of the study of scientific chemistry in Great Britain." He continued to be connected with the university until his death, and for nearly 34 years lectured with great reputation on chemistry, materia medica, and the theory and practice of medicine. He also delivered several series of clinical lectures at the royal infirmary. He possessed in a rare degree the faculty of presenting an abstract subject in a clear and attractive light, and his lectures, which were nearly extemporaneous, seldom failed to excite the interest and even the enthusiasm of his pupils. It is said that the class in materia medica, which under the former professor, Alston, a man of great learning, had not exceeded 10, was at once increased by Cullen to over 100. His works are: "First Lines of the Practice of Physic" (1775), containing his system of the nature and cure of diseases, which superseded that of Boerhaave; "Institutions of Medicine" (1777); *Synopsis Nosologiæ Methodicæ* (1780); a "Treatise of the Materia Medica" (1789); and some minor miscellaneous publications. The first of these were translated into several languages, and went through many editions. His clinical lectures were also published after his death, probably from notes taken by one of his pupils.

CULLERA, a town of Spain, in the province and 25 m. S. S. E. of the city of Valencia, on the Jucar, near its mouth in the Mediterranean; pop. about 10,000. It is surrounded by walls flanked by towers, contains barracks and several churches, and has an extensive coasting trade with France, the Balearic islands, and Spanish ports. The principal products are grain, rice, wine, muscatel raisins, and oil.

CULLODEN HOUSE, a family seat in Inverness-shire, Scotland, on Drummossie moor, 4 m. E. N. E. of Inverness, which gave its name to the battle that ended the career of the pretender in the rebellion of 1745, fought April 16, 1746. The English troops were led by the duke of Cumberland. The prince's army, commanded by Charles Edward in person, was almost destitute of artillery, in which arm the enemy were very powerful. The wild, undisciplined courage of the highlanders was vainly opposed to the discipline and cannon of the regulars. After a desperate attack and great carnage on both sides, the English troops stood firm, and the highlanders, unsupported and unofficered, broke and fled in all directions.

CULM, or **Kulm** (Polish, *Chelmno*), a city of Prussia, in the province of West Prussia, situated in a very fertile region, near the Vistula, 34 m. S. W. of Marienwerder; pop. in 1871, 8,455. It was founded about 1230 by the Teutonic knights, who divided Prussia into four dioceses, of which Culm with its district was one. It has a Catholic gymnasium, a cadet institution, an episcopal seminary, and considerable trade in corn. It was under Polish sovereignty from 1466 to 1772, when it was given to Prussia by the first partition of Poland. The inhabitants, of German origin, had their chartered city rights, copied from those of Magdeburg, collected and revised as early as 1394, which was ever recognized in old Prussia under the name of *Kulmer Handfeste*, or *Jus Culmense*.

CULM, in Bohemia. See KULM.

CULNA, or **Khalana,** a town of British India, in the district of Burdwan, Bengal, on the Hoogly, 48 m. N. by W. of Calcutta; pop. about 40,000. It is a station for steamers plying between Calcutta and the upper provinces, and has considerable trade in rice, grain, silk, and cotton. It has a flourishing school and mission of the Free church of Scotland.

CULPEPER, a N. county of Virginia, bordered S. by Rapidan river, N. E. by the N. branch of the Rappahannock, and drained in the N. part by Hazel river; area, 673 sq. m.; pop. in 1870, 12,227, of whom 6,169 were colored. The surface is greatly diversified by hills and valleys, and the soil very productive. The Rappahannock and Hazel rivers are here navigable, the latter for small boats only. There are some mineral springs, but they are yet very little known. Indian corn, wheat, oats, and wool are the staples. The Orange, Alexandria, and Manassas railroad traverses it. The chief productions in 1870 were 105,592 bushels of wheat, 361,654 of Indian corn, 78,568 of oats, 16,644 of potatoes, 2,706 tons of hay, 83,974 lbs. of butter, and 39,603 of wool. There were 2,338 horses, 2,563 milch cows, 4,066 other cattle, 10,127 sheep, and 5,889 swine; 5 flour mills, and 1 sash and blind factory. Capital, Fairfax, or Culpeper Court House.

CULPEPER, John, an early political leader of the provinces of North and South Carolina, was a refugee from the southern or Clarendon colony, and in 1678 was the head of an insurrection in the northern or Albemarle colony in favor of popular liberty. The navigation acts, by which excessive taxation was imposed on commerce, and an abridgment of political freedom by the "denial of a free election of an assembly," were the chief grievances. Under his direction, the people deposed the president and deputies of the proprietaries, seized the public funds, appointed new magistrates and judges, called a parliament, and took all the functions of government into their own hands; after which they sent Culpeper to England to negotiate a compromise. He was indicted for high treason, but through the influence of Shaftesbury was acquitted on the ground that no regular government had existed in Albemarle. He returned to Carolina, and in 1680 laid out the city of Charleston, reducing the paths, streets, and squares to comparative regularity, and enclosing the town site with a line of fortifications.

CULPEPER, or **Colepeper, Thomas,** lord, a colonial governor of Virginia, died in 1688. He was one of the grantees of the territory of Virginia, and in 1669 purchased of his co-grantees their rights to the country lying between the Rappahannock and Potomac rivers. This grant he surrendered, and in 1673 a new one, including the whole of Virginia for the term of 31 years, was issued to him and the earl of Arlington. Culpeper was at this time a member of the commission for trade and plantations, and had the reputation of being most cunning and covetous. In 1675 he was appointed governor of Virginia for life, but he did not come to his province until the early part of 1680, and he returned to England in the latter part of the same year. In 1682 he again came to Virginia, and having returned to England again in 1683 without the royal permission, and being also charged with having violated his instructions, he was by a proceeding of law deprived of his commission. He administered his office almost exclusively for his own pecuniary advantage, with little regard for the welfare of the people. Under his administration an act was passed to encourage emigration by enabling the governor to naturalize any person by instrument under his seal; also an act of indemnity for all offences committed in the rebellion under Gov. Berkeley, and one to prevent the frequent meeting of slaves.

CUMÆ, or **Cuma,** one of the most ancient and celebrated of the Greek cities of Italy, situated on the Campanian shore a little N. of Baiæ. It is said to have been founded by a joint col-

ony from Æolian Cyme and Eubœan Chalcis. The date of its foundation is uncertain, but of its extreme antiquity there can be no doubt, for it was in the zenith of its prosperity and power, ruling over the Campanian plain and the Tyrrhenian sea, while Rome was yet in its infancy. Cumæ was the mother of many famous and flourishing colonies in Italy and Sicily; and of the extent of its commerce and opulence, before the establishment of the Etruscan supremacy, the harbors of Dicæarchia and Misenum were splendid evidences. But as the Etruscans became powerful, the Cumæans declined, first losing their maritime superiority, then the dominion of the Campanian plain, and ultimately everything without their city walls. Thus stripped of their possessions, and beleaguered both by sea and land, they applied to Hiero of Syracuse for succor, and with the auxiliaries he sent them were enabled to defeat their enemies once more (474 B. C.), and to se-



Remains of a Greek Tomb.

cure themselves from attack for many years. But the warlike Samnites, after wresting all their southern conquests from the Etruscans, laid siege to Cumæ, took it in 420, put most of the male inhabitants to the sword or sold them as slaves, and planted a colony of their own countrymen in the captured city. In 338 Cumæ became a Roman *municipium*. During the second Punic war Hannibal besieged it in vain. During the wars of the Goths and Byzantines Cumæ acquired a temporary importance as the last stronghold of the Gothic kings in Italy; but after its capture by Narses (A. D. 553) it rapidly sunk into insignificance. Some remains of the city are still to be traced. A cavern in the rock on which the acropolis stood is still pointed out as the place where the famous sibyl resided and uttered her oracles. In 1853 a magnificent temple of Diana was discovered there, and over 150 tombs were explored, and many antiquarian treasures discovered.

CUMANÁ. **I.** A state of Venezuela, bounded N. by the Caribbean sea, E. by the gulf of Paria and the delta of the Orinoco, S. by the Orinoco, and W. by the state of Barcelona; area, 17,409 sq. m.; pop. about 76,000. It has two peninsulas on its N. coast, that of Paria separating the gulf of the same name from the Caribbean sea, and Araya, which forms the gulf of Cariaco. At the mouth of the gulf of Paria lies the British island of Trinidad. The gulf of Cariaco, which is 42 m. long and from 7 to 9 m. broad, is a fine roadstead, affording excellent anchorage. The surface of the province is traversed by mountain ranges, the chief of which crosses it from E. to W., parallel to the coast, and sends numerous spurs toward the S. These hills are not very high, but are generally steep and covered with dense forests, which afford many kinds of precious woods. Between the ranges are fertile and well watered valleys, well adapted for pasturage or cultivation. The chief rivers are the Guarapiche, Guanipa, Tigre, and Morichal, all of which empty into the gulf of Paria, and the Cumaná or Manzanares and Cariaco, affluents of the Caribbean sea. In the valleys of the Orinoco are numerous small streams and many lakes. The climate is very hot, but is generally healthy. The principal products are cacao, cotton, sugar, tobacco, maize, and vanilla, and cattle and mules are raised in large numbers. Salt is made along the coasts. **II. Cumaná,** or **New Toledo,** the capital of the state, situated near the mouth of the gulf of Cariaco, on the river Manzanares, about a mile from the sea, in lat. 10° 27′ N., lon. 64° 20′ W., 190 m. E. of Carácas; pop. about 12,000. It has a very fine and capacious harbor, defended by the fortress of San Antonio, built on a rocky eminence which commands the town. The city is poorly built, the houses being generally low and flat. It has been frequently visited by earthquakes. It was entirely destroyed, Oct. 21, 1766, in the space of a few minutes; and a similar visitation, Dec. 14, 1797, laid four fifths of it in ruins. The principal trade is in mules, cattle, dried meat, hides, salted fish, and cacao. The town has three suburbs, Serritos, San Francisco, and Guayquerias, the aggregate population of which nearly equals its own. Cumaná is one of the oldest cities built by Europeans in the new world, having been founded by Diego Castellon in 1523.

CUMANIA, Great and **Little,** two districts of Hungary. — Great Cumania (Hung. *Nagy Kunság*), in the circle beyond the Theiss, consists of a low plain, subject to frequent inundations from the rivers, and occupied to a great extent by swamps; area, about 420 sq. m.; pop. about 70,000, of whom the majority are Protestants. It differs from most Hungarian districts in having no large land owners. The inhabitants, formerly a privileged class, are a robust, plain, and patriotic people, fond of rural pursuits, and moderately wealthy. Chief town, Kardszag. — Little Cumania

(Hung. *Kis Kunság*) consists of several detached portions of land in the circle this side the Theiss, and is more than twice as large as Great Cumania, having an aggregate area of about 1,000 sq. m.; pop. about 85,000. In physical aspect, general characteristics, and the condition of its inhabitants, it closely resembles Great Cumania. Chief town, Félegyháza.—The districts have their name from now entirely Magyarized settlements of Cumans, a people of Ugric race, who from the 11th to the 14th century acted a conspicuous part in the history of the nations of eastern Europe, and in the 13th especially in that of Hungary. Both districts are now united with that of Jazygia. (See JAZYGES.)

CUMBERLAND, the name of eight counties in the United States. **I.** A S. W. county of Maine, bordering on the Atlantic, and bounded N. E. by the Androscoggin river; area, about 990 sq. m.; pop. in 1870, 82,021. The coast is indented by a number of bays, the principal of which, Casco bay, affords facilities for navigation and the fisheries hardly surpassed on the Atlantic coast. The surface of the county is diversified by several small lakes. From Sebago pond, the largest of these, a canal has been opened to the ocean. The soil is fertile and well cultivated. It is the most populous county in the state, and is traversed by the Portland division of the Grand Trunk railway of Canada, the Portland, Saco, and Portsmouth, the Maine Central, the Portland and Rochester, and the Portland and Ogdensburgh railroads. The chief productions in 1870 were 11,719 bushels of wheat, 510,207 of potatoes, 154,360 of Indian corn, 77,406 of oats, 31,656 of barley, 88,461 tons of hay, 69,844 lbs. of cheese, 1,060,811 of butter, and 48,295 of wool. There were 5,985 horses, 13,354 milch cows, 4,890 working oxen, 8,775 other cattle, 13,413 sheep, and 5,201 swine. There are numerous manufactories, of which the greater part are in Portland, the county seat. **II.** A S. W. county of New Jersey, bounded S. W. by Delaware bay, and E. by Tuckahoe creek; area, 480 sq. m.; pop. in 1870, 32,898. With the exception of some ranges of hills, the surface is generally level. East of Cohansey creek the soil is light, sandy, and overgrown with pine forests; west of the creek it is composed of clay and sandy loam. Marl is obtained in this part, and Greenwich township has some iron mines. The West Jersey railroad, Bridgeton branch, and the Vineland railroad traverse it. The chief productions in 1870 were 140,549 bushels of wheat, 507,539 of Indian corn, 98,079 of oats, 203,886 of Irish and 216,987 of sweet potatoes, 27,712 tons of hay, and 209,140 lbs. of butter. There were 3,439 horses, 4,444 milch cows, 3,372 other cattle, 3,821 sheep, and 5,369 swine; 6 manufactories of iron, 4 of glassware, 1 of cotton goods, 1 bleaching and dyeing establishment, 4 for canning fruits and vegetables, 8 flour mills, 10 saw mills, 1 woollen factory, 6 of wood work, 1 of straw goods, 8 of bricks, 3 of boots and shoes, and 6 ship-building establishments. Capital, Bridgeton. **III.** A S. county of Pennsylvania, lying chiefly within the Kittatinny or Cumberland valley, between Blue and South mountains; area, 545 sq. m.; pop. in 1870, 43,912. The Susquehanna river flows along its E. boundary, and the Conedogwinit creek intersects it. Superior limestone exists here in profusion, and iron ore has been found. The soil is rich, and agriculture flourishes. It is traversed by the Cumberland Valley, the South Mountain Iron Company's, the Pennsylvania Central, and the Northern Central railroads. The chief productions in 1870 were 809,046 bushels of wheat, 1,106,633 of Indian corn, 1,131,724 of oats, 160,688 of potatoes, 57,761 tons of hay, 858,471 lbs. of butter, and 28,139 of wool. There were 10,178 horses, 11,423 milch cows, 11,118 other cattle, 7,861 sheep, and 23,680 swine; 22 manufactories of carriages and wagons, 9 of iron, 5 of paper, 13 tanneries, 34 flour mills, 8 manufactories of agricultural implements, 3 of boots and shoes, 10 establishments for currying leather, 1 distillery, and 3 planing mills. Capital, Carlisle. **IV.** A central county of Virginia, bounded S. E. by the Appomattox and N. by the James, and intersected by Willis river; area, 310 sq. m.; pop. in 1870, 8,142, of whom 5,433 were colored. The surface is uneven, and the soil was originally productive, but is now in some places worn out. The chief productions in 1870 were 72,082 bushels of wheat, 64,257 of Indian corn, 42,945 of oats, and 956,855 lbs. of tobacco. There were 684 horses, 851 milch cows, 1,416 other cattle, 1,005 sheep, and 3,329 swine. Capital, Cumberland Court House. **V.** A S. central county of North Carolina; area, about 1,680 sq. m.; pop. in 1870, 17,035, of whom 7,515 were colored. It is intersected by Cape Fear river, and in great measure occupied by forests of pitch pine. Turpentine and lumber are exported by means of steamboats down Cape Fear river. The soil is generally good, and the surface considerably diversified. About half of the county lies within the hilly and granite region of North Carolina; the remainder is low and level. A railroad runs from Fayetteville to the coal fields in Chatham county. The chief productions in 1870 were 142,203 bushels of Indian corn, 13,491 of oats, 57,361 of sweet potatoes, and 484 bales of cotton. There were 743 horses, 2,025 milch cows, 4,235 other cattle, 4,724 sheep, and 12,695 swine; 3 cotton factories, 2 carriage factories, 2 flour mills, and 23 turpentine distilleries. Capital, Fayetteville. **VI.** An E. central county of Tennessee, drained by Emery's river and Caney fork of the Cumberland; area, 700 sq. m.; pop. in 1870, 3,461, of whom 98 were colored. The surface is hilly or mountainous. The chief productions in 1870 were 42,377 bushels of Indian corn, 9,115 of oats, 12,357 of potatoes, and 57,679 lbs. of butter. There were 527 horses, 964 milch cows, 2,105 other cattle, 4,466 sheep, and 10,311 swine. Capital,

Crossville. **VII.** A S. county of Kentucky, bordering on Tennessee, bisected by Cumberland river; area, about 375 sq. m.; pop. in 1870, 7,690, of whom 1,509 were colored. The surface is hilly near the river, and the soil moderately fertile. There is a remarkable oil spring near the river. The chief productions in 1870 were 20,523 bushels of wheat, 243,840 of Indian corn, 43,300 of oats, 64,948 lbs. of butter, and 1,304,366 of tobacco. There were 1,427 horses, 1,075 milch cows, 2,381 other cattle, 6,789 sheep, and 16,883 swine. Capital, Burksville. **VIII.** A S. E. county of Illinois, intersected by Embarras river; area, 310 sq. m.; pop. in 1870, 12,223. It is diversified by forests and prairies, and the soil is fertile. The St. Louis, Vandalia, Terre Haute, and Indianapolis railroad passes through it, and the Chicago division of the Illinois Central intersects the N. W. corner. The chief productions in 1870 were 85,247 bushels of wheat, 403,075 of Indian corn, 171,880 of oats, 9,372 tons of hay, 68,653 lbs. of butter, and 34,421 of wool. There were 3,570 horses, 2,328 milch cows, 3,645 other cattle, 12,132 sheep, and 10,058 swine; 10 saw mills, and 1 woollen factory. Capital, Prairie City.

CUMBERLAND, a county of Nova Scotia, Canada, bounded N. by Northumberland straits, N. W. by New Brunswick, Cumberland basin, and Chignecto bay, and S. and E. by Mines channel and basin and the county of Colchester; area, about 1,600 sq. m.; pop. in 1871, 23,518. It has the harbors of Pugwash and Wallace on the N. coast, and on the bay of Fundy Cumberland basin, Apple river, Advocate harbor, and Partridge island. It is watered by several rivers, and a large part of its extent from E. to W. is traversed by the Cobequid range of hills, which form a broad broken plateau. Near Cumberland basin are extensive tracts of diked marsh. Coal, gypsum, limestone, and sandstone are among the minerals. Agriculture, lumbering, and ship building form the principal branches of industry. The first settlers were French, some of whose descendants still remain. Capital, Amherst.

CUMBERLAND, a N. W. county of England, separated from Scotland by Solway frith and the Esk and Liddle rivers, bounded W. by the Irish sea, and bordering on the counties of Northumberland, Durham, Westmoreland, and Lancashire; area, 1,565 sq. m., two thirds of which are under cultivation; pop. in 1871, 220,245. The N. and N. W. parts are low and flat or gently undulating; the midland districts are traversed by hills, and the E. and S. W. parts occupied by mountains, among which are the famous summits of Skiddaw, Saddleback, and Helvellyn, about 3,000 ft. above the sea. In this picturesque district are Lakes Ullswater, Thirlmere, Bassenthwaite, Derwentwater, Buttermere, Crummock, Loweswater, Ennerdale, and Wastwater, renowned for their romantic scenery, and often visited by travellers. The principal rivers are the Derwent, Eden, and Esk. The soil of the valleys and river bottoms is generally rich; the lowlands have been much improved by draining and are very productive; the mountainous districts are fit for little but sheep pastures. Grain and other produce are largely exported. The chief minerals are coal, iron, silver, plumbago, copper, lead, and limestone. The first three are abundant; the purest plumbago is found at Borrowdale; and the iron ore is said to yield more than double the average proportion of metal. The lead mines near Alston belong almost exclusively to Greenwich hospital. The county is traversed by several railways. A ship canal extends from Carlisle to the Solway frith. A considerable extent of the great Roman wall erected by Hadrian is in this county, and many Roman remains of various kinds have been found here. The county suffered much from the Picts, Scots, and Danes, and was the scene of almost constant warfare during the border troubles. At the time of the conquest it was so desolate that William remitted its taxes, and it was not included in Domesday Book. The chief towns are Carlisle, the capital, Whitehaven, Workington, Cockermouth, Penrith, Keswick, and Egremont.

CUMBERLAND, a city and the capital of Allegany co., Md., on the left bank of the Potomac, and on the Baltimore and Ohio railroad; pop. in 1870, 8,056, of whom 623 were colored. It is the W. terminus of the Chesapeake and Ohio canal, and the E. terminus of the national road. A few miles west of the town, upon the summit of the Alleghanies, commences the district known as the Cumberland coal region, which extends west to the Ohio river. The mines of the eastern portion produce excellent semi-bituminous coal, and are worked by several companies. Iron ores in the same region, and others of the older formations nearer Cumberland, have given support to a few blast furnaces. It contains the county buildings, and several handsome church edifices.

CUMBERLAND. I. Richard, an English divine, born in London, July 13, 1632, died Oct. 9, 1718. He studied medicine a short time, but abandoned it for theology, and in 1658 became rector of Brampton in Northamptonshire, where he remained till 1667, when Sir Orlando Bridgman appointed him his chaplain, and soon after bestowed on him the living of Allhallows in Stamford. In 1692 he was appointed bishop of Peterborough. He was remarkable for purity of private life, for diligence in the discharge of his duties, and for extent and variety of learning. When 83 years of age he commenced the study of Coptic. In 1672 he published in Latin *De Legibus Naturæ Disquisitio Philosophica*, &c., a philosophical disquisition on the laws of nature, in which their form, chief heads, order, promulgation, and obligation are investigated from the nature of things, and the elements of the philosophy of Hobbes, both moral and political, are considered and refuted. It is upon this work that the reputation of

Cumberland principally rests. In style and arrangement it is very defective; it was printed in a most slovenly manner, and the numberless issues have not been corrected in subsequent reprints. Cumberland left an interleaved copy with some corrections and additions, which came into the possession of Bentley, who revised the whole. This copy was presented to the library of Trinity college, Cambridge, by the great-grandson of the author. In 1701 an abridged translation by James Tyrrel was published, and in 1727 a translation with some original dissertations by Maxwell. In 1744 M. Barbeyrac published a French translation of Bentley's copy. In 1750 appeared a third English translation by the Rev. John Towers, D. D. In this work Cumberland maintains that the tendency to effect the general good is the standard of morality and politics, and the endeavor to promote that good is the highest duty of man and the best means of pleasing God. In 1686 he published a work on Jewish weights and measures. Two works of his were edited and published after his death by his chaplain, Mr. Payne: one a translation of the fragments of Sanchoniathon's history, a work now believed to be a forgery, but which Cumberland defended and explained in a series of dissertations; and the other *Origines Gentium Antiquissimæ*, or "Attempts for Discovering the Times of the first Planting of Nations." The former appeared in 1720, the latter in 1724. Though written with great learning, modern critical scholarship has rendered them of little value. **II. Richard,** an English dramatist, great-grandson of the preceding, born in Cambridge, Feb. 19, 1732, died in London, May 7, 1811. His connections procured him an early introduction into political life; and after having filled the office of secretary to Lord Halifax, with other minor appointments, he was in 1775 made secretary of the board of trade, an office which was abolished in 1782, when he received a compensation allowance. He published "The Observer," a series of essays, largely based on the manuscripts of his maternal grandfather Dr. Richard Bentley, in which was displayed considerable classical learning, with much wit and elegant composition. The most successful of his numerous dramatic pieces were "The West Indian" and "The Wheel of Fortune." He was a copious writer on a great variety of subjects, and among his works are several novels and a collection of anecdotes of Spanish painters. He published his memoirs in 1806.

CUMBERLAND, William Augustus, duke of, third son of George II. of England, born April 15, 1721, died at Windsor, Oct. 31, 1765. He was wounded at the battle of Dettingen in 1743, and in 1745 he received the command of the allied army, and fought the battle of Fontenoy against Marshal Saxe, in which the French were victorious. He was next sent against the pretender in Scotland, whom he overthrew at the battle of Culloden; but the glory of this victory was stained by the cruelties and excesses of the victors. He was afterward appointed by the king commander-in-chief of the British army, and sent to the Netherlands; was defeated at Lafeldt by Marshal Saxe in 1747, and gained no advantages in this war, which was terminated by the peace of Aix-la-Chapelle. At the commencement of the seven years' war the duke of Cumberland was despatched to Germany, when the victory of Marshal d'Estrées at Hastenbeck forced him to the convention of Closter Seven (1757), by which the English army, 40,000 strong, was disarmed and disbanded, and Hanover was placed at the mercy of the French, who ravaged it at their will. On his return to England the king was so dissatisfied that the duke threw up his appointments, and was never again invited to take office.—For the duke of Cumberland, afterward king of Hanover, see Ernest Augustus.

CUMBERLAND MOUNTAINS, that portion of the Appalachian group which ranges along the S. W. border of Virginia and the S. E. of Kentucky, and thence passes across the state of Tennessee into the N. E. part of Alabama. It spreads over a width of about 50 m., parallel ridges alternating with longitudinal valleys. The ridges rarely exceed 2,000 ft. in height. They are rocky and little cultivated, but the valleys are fertile. These mountains lie west of the range of granite and metamorphic rocks which compose the mountains on the W. borders of North Carolina and the N. part of Georgia. They are upon the range of the great coal formation of the middle states, and essentially composed of the same groups of stratified rocks as those of the Alleghany mountains, Chestnut ridge, and Laurel hill in Pennsylvania. The Tennessee river and its branches drain the E. slopes until it crosses the range, flowing toward the Ohio, like the Cumberland, the sources of which are on the W. side.

CUMBERLAND PRESBYTERIANS, a denomination of Christians which took its rise during the religious revival in Kentucky and Tennessee in 1801–'3. So great was the excitement, and so vast were the multitudes who came from all parts of the country to the camp meetings, that it was found impossible to supply the demand for ministers, and laymen were appointed to preach by the presbytery of Transylvania. Their reception, however, was strenuously opposed by some of the clergy, and they were refused ordination. A new presbytery which was formed in 1803 in the southern part of the state, denominated the Cumberland presbytery, subsequently received them and granted them ordination, at the same time taking on trial as licentiates others of similar qualifications. The action of the presbytery in this matter was reviewed by the synod of Kentucky, which denied its validity, and appointed a commission to examine the newly ordained ministers both in regard to their attainments and the doctrines which they held. The result was,

that the course pursued by the Cumberland presbytery was condemned, and the sentence of the synod was confirmed by the general assembly of the Presbyterian church. The presbytery, demurring to this decision, withdrew from the jurisdiction of the general assembly, and in 1810 organized a distinct and separate body, which has since that time been known as the Cumberland Presbyterian church. Their progress as an independent church was marked with great success, so that in 1813 they formed a synod and adopted articles of religion and a form of church government. In doctrine they occupy a sort of middle ground between Calvinism and Arminianism. They reject the doctrine of eternal, unconditional election and reprobation, and believe in the universality of the atonement and the final conservation of the saints. Their government is presbyterian in form, embracing the session, presbytery, synod, and general assembly, all of which are constituted in the same manner as those of the Presbyterian church. Though they have local pastors, they have adopted the itinerant system of the Methodists. By this system of circuits and stations their ministers have spread themselves over the west and south, and even to California. Their general assembly had in 1873 under its supervision 24 synods, 105 presbyteries, about 1,100 ministers, 1,950 congregations, 125,000 communicants, and 300 probationers for the ministry. They had five colleges, viz.: Cumberland university (with a theological school), at Lebanon, Tenn.; Waynesburg college, at Waynesburg, Pa.; McGee college, at College Mound, Mo.; Lincoln university, at Lincoln, Ill.; and Sonoma college, at Sonoma, Cal.; also a number of seminaries. Religious journals were published in their interest at Nashville (three), St. Louis, Tehuacana, Tex., and San Francisco.

CUMBERLAND RIVER, a stream which rises in the Cumberland mountains near the S. E. boundary of Kentucky, flows W. and S. W., and enters Tennessee between Jackson and Overton counties. After a circuit of nearly 250 m. through the middle of Tennessee, it makes a bend to the N. W., recrosses the Kentucky border about 10 m. from the Tennessee river, and runs nearly parallel with that stream until it joins the Ohio at Smithland. Its whole course is estimated at over 600 m. At high water it is navigable by steamboats to Nashville, 200 m. from its mouth, and by small boats for nearly 500 m. Not far from Williamsburg, Ky., it has a remarkable vertical fall of 60 ft. It drains an area of about 17,000 sq. m.

CUMING, a N. E. county of Nebraska, intersected by the N. branch of the Elkhorn river; area, 400 sq. m.; pop. in 1870, 2,964. The Omaha and Northwestern railroad is to pass through it, and the Elkhorn Valley road is to run near the S. W. corner. The surface is undulating prairie, interspersed with timbered bottom lands; the soil is fertile. The chief productions in 1870 were 91,381 bushels of wheat, 80,786 of Indian corn, 60,955 of oats, 11,809 of barley, 20,694 of potatoes, and 6,708 tons of hay. There were 831 horses, 720 milch cows, 1,210 other cattle, 820 sheep, and 3,065 swine. Capital, West Point.

CUMING, Hugh, an English naturalist, born in Devonshire in 1791, died in London in 1865. His collection of shells, over 60,000 in number, was for several years one of the finest in Europe. In 1848 it represented more than 19,000 species and varieties, and was afterward much increased from the principal cabinets on the continent, which he visited annually, carrying the duplicates of his rarities and exchanging them. His specimens were wonderfully perfect in form, texture, and color, and were amassed not only by diligently frequenting the shops of commercial naturalists in seaports, but also by passing 30 years of his life in travel and personal researches, collecting every variety of mollusks from their native seas and rivers, in the Atlantic, Pacific, and Indian oceans, and in the islands of the Malay archipelago.

CUMIN SEED, the fruit or seed of the *cuminum cyminum*, an umbelliferous plant, cultivated in the East from the remotest times for its seeds,



Cumin.

which have a bitter and aromatic taste and a peculiar odor. The Latin poets allude to their power of producing languor. They are obtained in Egypt, Greece, Malta, and Sicily. They are little used in medicine.

CUMMING, John, D. D., a British clergyman, born in Aberdeenshire, Scotland, Nov. 10, 1810. He studied at King's college, Aberdeen, became tutor in a school near London, and in 1833 was ordained as pastor of the Scotch church, Crown court, Covent Garden, where he still officiates. He is a member of the established church of Scotland, and opposed the separation of the Free church in 1843. He became known as an earnest opponent of Roman Catholicism, but has attracted most atten-

tion by his interpretation of sacred prophecy, especially with reference to the second coming of Christ and the manifestation of his kingdom on earth. His sermons have attracted great numbers of hearers, and having been published in book form have attained a wide circulation both in England and in America. Among the best known of these volumes are the "Apocalyptic Sketches" (London, 1849); "The great Tribulation" (1859); "Redemption Draweth Nigh" (1861); "The Destiny of Nations" (1864); "Sounding of the Last Trumpet" (1867); and "The Seventh Vial" and "Fall of Babylon Foreshadowed" (1870).

CUMMING, Roualeyn George Gordon, a Scottish sportsman and author, born March 15, 1820, died at Fort Augustus, Inverness-shire, March 24, 1866. He was the second son of Sir William Gordon Gordon Cumming, and from an early age had abundant experiences as a deer-stalker in the highlands of Badenoch. He spent some years in the military service in India and the Cape of Good Hope, but left the army about 1843. Between October of that year and March, 1849, he made five hunting expeditions into various parts of South Africa, which he recorded in his "Hunter's Life in South Africa" (London, 1850). His adventures partake so largely of the marvellous that their accuracy has more than once been questioned. He derived a considerable profit from the skins, tusks, and other trophies of the chase, of which he opened an exhibition on his return to England. He claimed to have killed more than 100 elephants.

CUMMINGS, Joseph, D. D., LL. D., an American clergyman, born at Falmouth, Me., March 3, 1817. After a preparatory training at the Maine conference seminary, he entered the Wesleyan university, where he graduated in 1840. He was immediately elected teacher of natural science and mathematics in Amenia seminary, of which institution he became principal in 1843. After three years he joined the New England conference, and was stationed successively in Malden, Chelsea, and Boston, until 1853, when he was elected professor of systematic theology in the Methodist general Biblical institute at Concord, N. H. In 1854 he was elected president of Genesee college, Lima, N. Y., where he remained till 1857, when he became president of the Wesleyan university at Middletown, Conn. In 1872–'3 he made a tour of Europe for the study of improved educational methods.

CUMMINS, Maria S., an American novelist, born in Salem, Mass., April 10, 1827, died in Dorchester, Oct. 1, 1866. She was the daughter of Judge David Cummins of Salem. Her first book, "The Lamplighter" (1853), attained such a popularity that 40,000 copies were issued within eight weeks of its publication, and over 100,000 copies were sold in this country alone. It met with success also in England, and two translations of it appeared in France, one entitled *Gerty*, the other *L'allumeur de réverbères*. A German translation was published in Leipsic in 1856. Among her other works are "Mabel Vaughan" (1857), "El Fureidis" (1860), and "Haunted Hearts" (1863). "El Fureidis," a story of the East, contains graphic and truthful pictures of life and scenes in Palestine, which the author had never visited. She was also a frequent contributor to periodicals.

CUNDINAMARCA, a state of the United States of Colombia, lying between lat. 1° and 6° N., and lon. 69° 20′ and 76° 20′ W.; bounded N. by Boyacá and Antioquia, E. by Venezuela, S. by Brazil and Cauca, and W. by Cauca and Antioquia; area, 79,845 sq. m.; pop. in 1870, 409,602. Its capital is Bogotá, which is also the capital of the republic. Its W. portion is mountainous, comprising the cordilleras de Cundinamarca and a large part of the fertile valley of the Magdalena; but in the east are vast plains drained by the affluents of the Amazon and the Yucapari. It is well timbered, contains gold, silver, copper, lead, coal, and rock salt, and produces almost every kind of crop common to Colombia. Its population consists of whites, Indians, and mixed races, in nearly equal proportions. The cataract of Tequendama and the natural bridges of Iconozo and Pandi are in this state.—Cundinamarca was one of the chief centres of ancient American civilization, and wonderful architectural remains are still to be met with in various parts. It was conquered by the Spaniards, under Gonzalo Ximenes de Quesada, in the early part of the 16th century.

CUNDURANGO, the wood and bark of a vine which grows in Ecuador, and belongs to the family *asclepiadaceæ*. It was brought to the notice of the profession and the public in the United States as a cure for cancer in 1871, under the patronage of the department of state, and was sold at enormous prices. The only efficacy which can be attributed to it, on theoretical grounds, is that it belongs to the class of aromatic bitters. Experience has shown that for the cure of cancer or any other chronic disease it is entirely inert.

CUNEGO, Domenico, an Italian engraver, born at Verona in 1727, died in Rome about 1800. He went to Rome with an English architect and settled there. He was employed four years at Berlin, engraving the portraits of the king and princes after Cunningham, and some time in London on Boydell's Shakespeare. His principal works are 22 plates in Gavin Hamilton's *Schola Italiana*, and his outline of the "Last Judgment," from Michel Angelo's frescoes in the Sistine chapel.

CUNEIFORM INSCRIPTIONS, or **Cuneatic Inscriptions** (Lat. *cuneus*, a wedge), the monumental records of the inhabitants of the ancient Assyrian, Babylonian, and Persian empires. They are also called claviform (Lat. *clavus*, a nail), cludiform (mediæval Lat. *cludus*, a nail), arrow-headed inscriptions, and sphenograms (Gr. *σφήν*, a wedge). The writing is also called sphenography. All these names refer to the

form of the elementary characters. These elements are two, the one resembling a wedge (), the other an arrow-head (); but if we regard the latter as a combination of two wedges, we may consider the writing as made up wholly of wedges. All the characters were produced by different combinations and arrangements of these figures, the variations being hardly more than those in the different handwritings of different persons. The wedge is sometimes shortened to nearly the form of an equilateral triangle (); and there are other unimportant variations. In some of the most ancient inscriptions the wedge is nearly a straight line, but all the forms are destitute of curves. This most ancient kind is sometimes, though for no good reason, styled hieratic. The inscriptions are found upon rocks, stone slabs, and monuments, on vases, gems, seals, and especially upon bricks and small cylinders or prisms, made of clay and baked in the sun or burned in kilns. The wedges are sometimes as much as two inches in length, while others, especially those made in clay, are so small as to require the aid of a magnifying glass to decipher them. Most of them are found in western Persia, but they are scattered at intervals from the confines of the Caspian to Egypt. Those which were first discovered and copied are in three different languages, and as many different kinds of writing, although each is composed of wedges. In all these trilingual inscriptions the writing which stands first, or in the most prominent position, is the simplest and was first deciphered. It is known as the Persian cuneiform writing. That which comes next is more complicated, consisting of nearly three times as many characters as the first, and is generally called Scythian; while the third, usually designated as the Assyrian or Babylonian, is the most complicated, and is variously estimated to consist of from 600 to 700 characters. The deciphering of the characters and interpretation of the language of the first kind may be considered complete and satisfactory, and will always be regarded as one of the greatest achievements of modern scholarship. The use of this kind of writing seems to have ceased soon after the time of Alexander the Great, and for nearly 2,000 years it had been utterly forgotten. In 1618 Garcia de Sylva Figueroa, ambassador of Philip III. of Spain, while on a visit to the ruins of Persepolis, copied a small portion of an inscription, and expressed the conviction that it was in some lost writing, and perhaps some lost language. Pietro della Valle, the Italian traveller, was at this time in Persia, and on terms of friendship with Figueroa; and in 1622 he sent to Athanasius Kircher a brick inscribed with sphenograms. From that time almost every traveller of note in the East referred to these inscriptions, and many brought specimens and copies to Europe. Half a century later Chardin published some which he had copied at Persepolis, and declared his opinion that they were writing and not hieroglyphics, but that nothing more would ever be known in regard to them. In 1767 Karstens Niebuhr, the father of the celebrated historian, on his return from a voyage in the East undertaken in the service of the Danish government, brought with him copies of inscriptions found in the ruins of Persepolis. These were published a few years after, and it was principally upon them that the first successful attempts to decipher this kind of writing were made. But during the period of a century and a half that had elapsed since the time of Figueroa and Della Valle, numerous speculations as to the nature of these inscriptions had been published. Thomas Hyde, an oriental scholar of eminence, considered them mere idle fancies of the architect, who wished to show how many different combinations of a simple stroke could be made; and he regretted that he had ever wasted any time upon them. Witte of Rostock thought they were marks of the work of generations of worms. Other opinions were that they were talismanic signs, formulas of priests, astronomical symbols, and charms. By different persons the characters were considered to be Chinese, Cufic, Hebrew, Samaritan, or Greek; and some thought they resembled the runes of the north of Europe. Those whose opinions were the most absurd were the most earnest in their advocacy. The first real step in the solution of the problem was made by Karstens Niebuhr. He did not pretend to interpret these inscriptions; but he rightfully conjectured that those of which he had published copies were written in three different alphabets. That they were also in three different languages he of course could not know, but supposed the same text was written in each of the three alphabets. In 1798 Tychsen of Rostock, and in 1800 Münter of Copenhagen, attempted further to elucidate this theory; but all they really accomplished was the correct conjectures that a frequently recurring group of characters represented some word signifying "king," and that a single wedge, frequently recurring, placed in an oblique direction pointing downward and to the right, was employed to separate the words. Such was the condition of the problem previous to 1802. On Sept. 7 of that year G. F. Grotefend, then 27 years old, presented to the academy of sciences at Göttingen his first attempt at deciphering the cuneiform alphabet. The most complete exposition of the manner in which he arrived at his results is contained in an appendix to Heeren's *Ideen über die Politik, den Verkehr und den Handel der vornehmsten Völker der alten Welt*, editions of 1815 and 1824. It is also contained in the English translations of that work, "Historical Researches," &c. (London, 1833 and 1854, vol. ii. p. 319). Grotefend endeavored to establish that the inscriptions were in some kind of writing, and that their chief characteristic was

the absence of all curvatures, in consequence of which they were especially fitted for cutting in stone and other hard materials; and it is true that no direct evidence of the employment of sphenography in any manner except upon stone or clay hardened by heat or materials of a like nature has been found. Grotefend confined his attention to the first or simplest kind of cuneiform writing. He remarked that all the horizontal wedges pointed toward the right, all the perpendicular ones downward, and all the oblique ones upward toward the right or downward toward the right, while the inner angle of the arrowhead always opened toward the right. Hence he concluded that the writing was to be read from left to right. He further concluded that the inscriptions probably belonged to the age of the Achæmenian kings of Persia; and he determined to compare the names of those kings as given in the Greek historians with some of the first words of the inscriptions. He conjectured that two combinations of characters occurring in the inscriptions represented the names of kings who were father and son, and he endeavored to ascertain which of the Greek names of the Persian kings the characters probably represented. They could not be Cyrus and Cambyses, because what he supposed to be the first letters in the names were different. They could not be Cyrus and Artaxerxes, for the first seemed to be too short and the second too long in proportion to the characters. The names of Darius and Xerxes were free from these objections. Darius and Xerxes were father and son; their names commenced with different letters, and they seemed about the right length. In all these conjectures and conclusions he was correct, and the first step in the solution of the problem was made. But he was not able to complete it. He had but a small number of copies of inscriptions; they were not entirely accurate; and they did not contain enough examples of the use of some of the letters to determine what sounds they represented. Nor did he possess the knowledge necessary to complete success. He did not understand Sanskrit, or any of the Iranian languages with which the language of ancient Persia is connected. He however succeeded in determining nearly one third of the letters correctly, and came near to a few others. The next important discovery was made by R. Rask, the celebrated Danish traveller and philologist. In his work on the Zend language (1826) he determined the value of two characters representing *m* and *n*, which Grotefend had interpreted differently. No further progress was made for the next ten years. In 1836 two works appeared almost simultaneously by two of the greatest orientalists of Europe, Eugène Burnouf in France and Christian Lassen in Germany. Each had worked in entire independence of the other. Though the great French scholar made considerable advances beyond the results of Grotefend, his work was in a measure cast in the shade by that of his German contemporary. Lassen's most important discovery was that the short vowel *a* was in certain conditions to be regarded as inherent in the character representing the consonant, in the same manner as in the Sanskrit alphabet. Although Lassen's alphabet was not perfect, it was sufficient to enable scholars to undertake the work of investigating the grammatical form and interpreting the meaning of the language of the inscriptions. From this time many scholars directed their attention to the subject. Beer in Germany and Jacquet in France contributed to the correction of some of Lassen's errors. But as yet the scholars of Europe had not at hand a sufficient number of inscriptions to make much progress. In 1839 the widow of C. J. Rich, an Englishman who had resided many years in Bagdad, published from manuscripts left by her husband several additional inscriptions which he had copied with great care. In 1845 N. L. Westergaard of Copenhagen, one of the most learned orientalists of Europe, returned from a scientific journey in the East, and brought copies of several inscriptions. He submitted his papers to Lassen, whereby the latter was enabled to correct some of his previous errors, and he published a more accurate alphabet in the journal of the German oriental society. A. Holtzmann also, in a work published in 1845, corrected some errors in Lassen's last work. But even the alphabet was not yet entirely understood. It was certain that in some cases three, in others two, different characters represented the same letter; but under what conditions one form was used rather than another was not yet determined. Three different persons, widely separated, discovered the key to the difficulty. H. C. Rawlinson of England, of whom we shall hereafter speak more fully, in a note dated at Bagdad, Aug. 25, 1846, the Rev. E. Hincks of Killyleagh in Ireland, in a paper in the transactions of the royal Irish academy, dated Oct. 22 of the same year, and Julius Oppert, in a work published in Berlin in 1847, but before the views of Rawlinson and Hincks were known in Germany, all discovered that the use of one or the other form of a consonant depended upon the vowel which followed it. Thus the sound represented by our letter *d* is indicated in these inscriptions by three different characters, according as it is followed by *a* or *i* or *u*. But the work of Oppert also contained the important discovery that the nasals *m* and *n* were often to be pronounced before consonants although not written. This last discovery completed the deciphering of the cuneiform writing of the first kind, and no essential change in the alphabet has since been made. This alphabet, with its transliteration into Latin letters, is herewith given. It will be observed that some of the consonants vary in form according to the vowel which follows them, while others have the same form before all the vowels. The cause of this anomaly is not yet known.

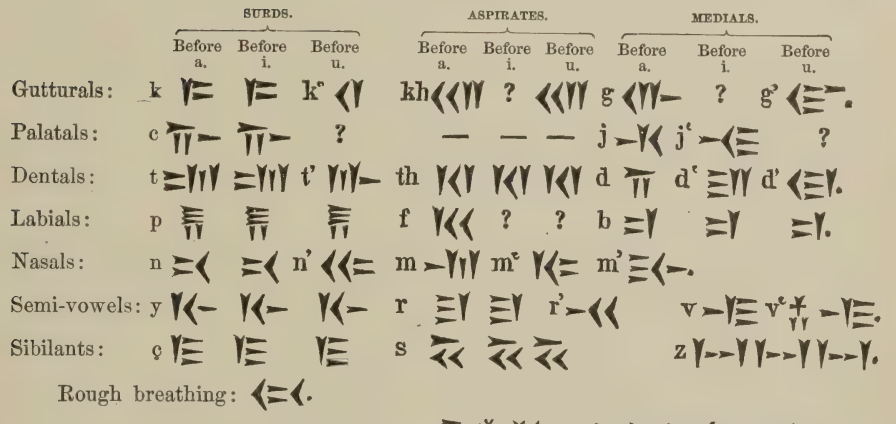
It is known that the writing was at one time syllabic. For example, there was one character to represent the syllable *da*, another to represent *di*, and another to represent *du;* and the vowels were not represented by any separate symbol. Afterward characters were invented to represent the vowels; but the various forms of the consonants, although only one form of each was any longer necessary, were in the case of some of the letters still retained. But why the various forms should have been retained in the case of some letters and not of others, is a point not yet satisfactorily explained.—While Burnouf, Lassen, and others were prosecuting their labors in Europe, another investigator was at work in the country where the inscriptions were chiefly found. H. C. Rawlinson, a young Englishman in the military service of the East India company, had been sent to Persia in 1833. In 1835 he was stationed at Kermanshah, and there commenced the study of the inscriptions. He knew nothing of what had been done in Europe, not even of the labors of Grotefend. He commenced with inscriptions found at Mount Elvend, near Hamadan, a city N. E. of Kermanshah. The following year, when in Teheran, he became acquainted with Grotefend's paper; but he had already proceeded further than the German scholar. In 1837 he copied the first column of the great Behistun inscription, and four of the smaller inscriptions. On Jan. 1, 1838, he sent to the royal Asiatic society an account of his labors. In this year he first became acquaint-

PERSIAN CUNEIFORM ALPHABET.

Vowels.



Consonants.

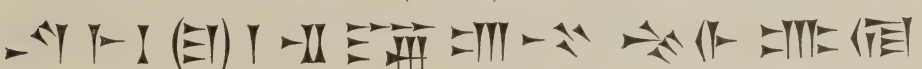


ed with Burnouf's works. He continued his study of the inscriptions till 1839, and had already deciphered and interpreted with a great degree of accuracy the whole of the Behistun inscription, when the breaking out of the war in Afghanistan rendered necessary his transfer to that country, and several years elapsed before he could resume his investigations. He returned to Persia in 1844, and was finally able to present to the royal Asiatic society complete copies of the Persian portion of the Behistun inscription, of which the society published facsimiles in September, 1846. These contained more of the cuneiform writing of the first kind than all the other inscriptions then known in Europe put together. Near the city of Kermanshah, toward the east, the mountain Behistun rises suddenly and precipitously from the surrounding plain to a height of about 1,700 ft. The great inscription is cut upon the rock at a height of 300 ft. from the base. The face of the rock was first cut smooth, and wherever a fault made it necessary, a stone was set in and fastened with molten lead so accurately that even at the present day it can hardly be detected. Highest on the rock is a figure intended to represent the Persian god Auramazda. Underneath this are several other figures. First on the left are armed attendants. Then comes Darius the king, standing with one hand uplifted and one foot upon the breast of a man lying prostrate on his back. Approaching Darius are nine other figures in line, connected by a cord passing around their necks, and with their hands bound behind their backs; these figures, as we learn from the inscription, repre-

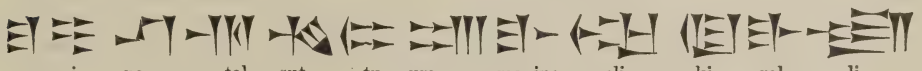
sent the rebels who at various times and places had proclaimed themselves kings, and had been subdued by Darius. Above the figure of Darius is an inscription which begins, "I am Darius the great king, the king of kings, king in Persia, king of the provinces, son of Vistâçpa, grandson of Arsâma the Achæmenian." The inscription then gives his genealogy, and closes: "Eight of my family were kings before; I am the ninth. For a very long time have we been kings." Under the prostrate figure is inscribed: "This Gaumata the Magus lied. Thus said he: I am Bardiya, the son of Cyrus; I am king." On the third figure, and extending over on the rock, is inscribed: "This Fravartis lied; thus said he: I am Kshathrita of the family of Uvakshatara; I am king in Media." Over each of the other figures is a similar inscription, the name of each being given, and each being accused of lying in pretending to be a king in provinces in which he had rebelled. Under this group of sculpture the great Persian inscription is cut. The wedges of which the writing is composed are a little more than an inch in length, and for beauty and correctness of execution it stands unrivalled. After being cut it was covered with a kind of hard silicious glazing, which in some places has peeled off and fallen down. Pieces of it are still found on the rocks below. The inscription is in five parallel columns, but the fifth is only about half as long as the other four. The first column is almost entirely preserved. A stream of water flowing from above has rendered illegible the central part of the second column, but by comparison with the other parts of the inscription, and the Scythian and Assyrian translations which accompany it, the missing portions have been satisfactorily restored. The third column is almost perfectly preserved. The fourth has been injured in the same way as the second, but more extensively, and cannot be so satisfactorily restored. The fifth column is almost entirely destroyed, and when Rawlinson last visited it he found that the rock had suffered so much since his previous visit that it was no longer possible to reach it with the ladders. The copy of the inscription was made by Rawlinson, with the aid of two skilful Kurdish climbers, at considerable personal risk. The lower part has been injured by the elements and probably by the Mohammedans, who when they overran Persia destroyed all the inscriptions which fell in their way; but the inaccessibility of the place where this one was situated preserved it in a great measure from their fanatical zeal. The inscription printed in Roman letters of the size here used would fill about eight columns of this Cyclopædia; and including the Scythian and Assyrian translations (the former in five, the latter in four columns), and the smaller inscriptions, there would be about a dozen pages. Considering that, on an average, there are about four wedges for every letter, one can form some idea of the immense labor expended. The inscription was most probably made a little before the year 500 B. C. It commences in a manner similar to the inscription over the figure of Darius mentioned above, and enumerates the 23 countries over which, through the grace of Auramazda, Darius had succeeded in establishing his sway. The greater part of the inscription is then occupied with an account of his wars against the various persons represented in the sculpture who had rebelled against him, and of their subjugation and punishment. The latter part of the inscription is occupied with praises and thanks to Auramazda, and invocations of his blessings upon all those who should preserve and make known this record, and of his wrath upon all who should destroy or conceal it. Throughout the inscription he constantly ascribes each one of his victories to the grace and assistance of Auramazda. Of the other inscriptions found in various places, the most ancient is one of the first Cyrus. It was found at Murghab, which is supposed to be the seat of the ancient Pasargadæ, upon an isolated block of marble, and is repeated in several places in the neighborhood. It consists of only four words, "I Cyrus, king, Achæmenide." Of Cambyses, the successor of Cyrus, no inscriptions have been discovered. Of Darius there are several others, the most important being those found in the ruins of Persepolis and the neighboring country. The inscriptions of Xerxes are next in extent and importance. Of the remaining kings of the Achæmenian dynasty we have a few, mostly very short. The most important are one of Artaxerxes Mnemon, found at Susa, and one of Artaxerxes Ochus, found at Persepolis. This, the last in chronological order, shows that the language of Persia was already becoming corrupted. The facsimile copies of the inscription published by the royal Asiatic society were accompanied by an elaborate paper by Rawlinson, and a complete translation. The subsequent labors of Rawlinson and of other European scholars have brought the interpretation both of this and the other inscriptions to such a degree of completeness that they can now be studied with almost as much facility and satisfaction as Sanskrit or Greek. The language in which they are written belongs to the Iranian branch of the great Indo-European family. It is nearly related to the language of the Zend Avesta and to the Sanskrit, and it was principally by comparison with those two languages that Rawlinson, and after him the other scholars of Europe, succeeded in interpreting it.—We pass now to the other two kinds of writing which, as we have remarked, appear upon almost all the monuments on which the first is found. They are much more complicated than the first, and far more difficult of interpretation. The writing of the second kind, so designated because on the monuments it stands next after the Persian, is undoubtedly older than the latter, and is nearly related to the third kind. It consists of about 100 different characters, some

of which are supposed to represent letters, others syllables, and others are perhaps ideographs or pictures. The language is supposed to belong to that family variously designated by philologists as the Tartar-Finnish, Mongolian, Turanian, and Scythian. In works treating of these inscriptions it is perhaps most frequently called by the last name, and we have so designated it. The greater part of what has been written upon the subject by Rawlinson, Norris, Westergaard, Oppert, and others is scattered in the journals of learned societies, more especially the "Journal of the Royal Asiatic Society of Great Britain," the *Mémoires de la société royale des antiquaires du Nord* of Copenhagen, the *Journal Asiatique* of Paris, and the *Zeitschrift der deutschen Morgenländischen Gesellschaft.* The third kind of cuneiform writing presents if possible still more formidable difficulties, while far stronger motives stimulate the endeavor to overcome them. Previous to 1842 the chief specimens of this kind were those on the same monuments on which were found the Persian and Scythian inscriptions; but in that year M. Botta, French consul at Mosul, commenced making excavations in the mounds near that city. Mr. A. H. Layard was then travelling in the East, and made the acquaintance of M. Botta. In 1845 Botta made known his wonderful discoveries, and in October of that year Layard, under the patronage of the British museum, started for Mosul to engage in a friendly rivalry with Botta in exhuming the ruins of Nineveh, the long lost capital of the ancient Assyrian empire. The walls of the palaces he unearthed were covered with cuneiform inscriptions, and immense numbers of clay tablets and cylinders or prisms covered with the same characters were found. Thousands of these were sent to the British museum, of which they now form one of the most important depart-

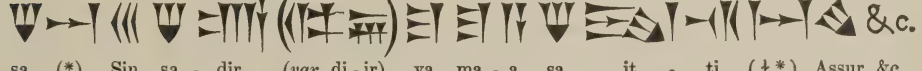
TRANSLITERATION AND TRANSLATION OF A PORTION OF AN ASSYRIAN DECAGON IN THE BRITISH MUSEUM—A, COL. IV., LINES 48–50.



ina	immi	su	(va)	istin		sapru		ina	sat	mu	- si	u	- tul
In	days	those	then	a		seer		in(the)	middle	(of the)	night,		slept



va	i - na	- tal	sut -	tu	um -	ma	ina	eli		ki - gal	- li		
and		dreamed	(a)	dream,		thus:		"Concerning		(the) matter			



sa	(*)	Sin	sa -	dir	(*var.* di - ir)	va	ma - a	sa		it -	ti	(†*)	Assur, &c.
which		Sin	was	arranging		and	of them	who		against			Asshur, &c.

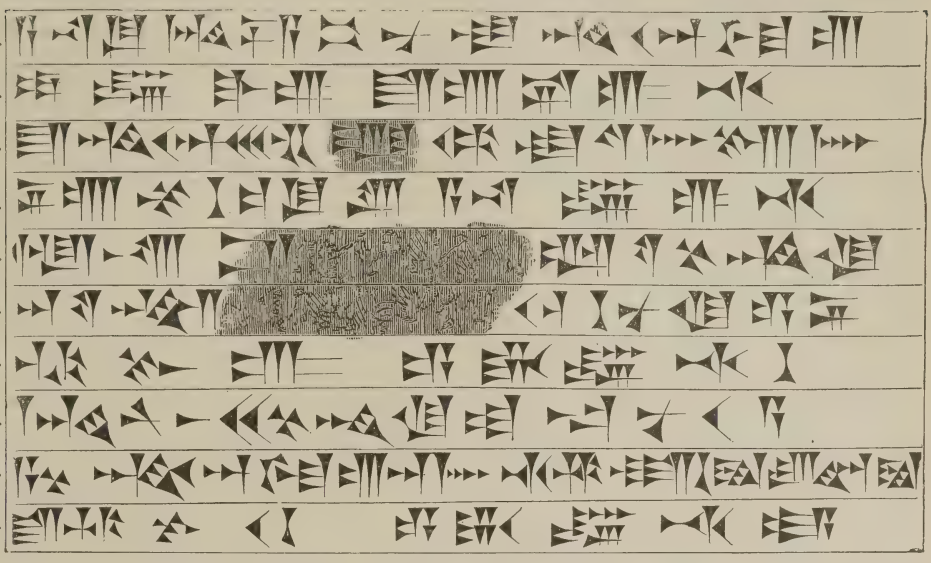
ments; and Mr. Layard's published accounts of his researches excited general attention. In 1849 and 1850 Botta also published in Paris an account of his researches, and the Louvre has a department devoted to Assyrian antiquities almost as extensive as that of the British museum. Some years afterward an expedition was sent out by the French government under the direction of Oppert, an account of which he published in 1859 and 1863. In 1873 Mr. George Smith explored Mesopotamia at the expense of the London "Telegraph," and he is expected to return there during the present year (1874) as the agent of the British museum. Thus a vast mass of inscriptions upon slabs, tablets, bricks, &c., has been collected. To the interpretation of these records a great number of scholars have devoted themselves, among whom Rawlinson, Hincks, Morris, Smith, Talbot, Sayce, Botta, De Saulcy, Oppert, Lenormant, Ménant, and Schrader have been most distinguished. The success that has attended their efforts warrants the belief that the interpretation of all the records which are of any interest will be finally accomplished. The difficulties which have been overcome will be best appreciated from a statement, necessarily brief, of the results of their labors. From very ancient times three, and perhaps four, different peoples inhabited the Assyrian empire. They differed in origin and language, and were yet in close contact and had intimate political and commercial relations with each other. With which of them sphenography originated it is as yet impossible to decide; but it was adopted from one people by another, and variously modified by each. It was originally a system of hieroglyphic or picture writing, and was undoubtedly invented by a people who did not belong to either the Indo-Germanic or Semitic family. Should the interpretation of the Medo-Scythian inscriptions, those of the

* Determinative sign used where the name of a god is to follow.

† Determinative wedge used where the name of a person is to follow.

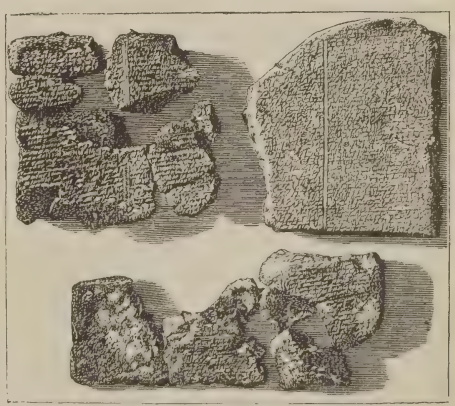
second class, ever be as fully accomplished as that of the other two kinds, it will undoubtedly throw much light on the origin and history of the writing. The Assyrians in adopting this system modified it to suit their own ideas, but it was not until the times of the Persians that it became an almost purely alphabetic system. In the Assyrian inscriptions the different groups of wedges represent, first, ideas, but having been adopted from a foreign people speaking a different language, the words which originally corresponded to those ideas were entirely different from the Assyrian words representing the same ideas; second, syllables, used in spelling words without any reference to the meaning of the characters as representatives of ideas. Thus a certain group of six wedges is used as an ideograph to denote "father" (Assyrian *abu*), but when used as a phonograph in spelling other words it represents the syllables *at* and *ad*. All the groups used as phonographs represent either vowels or consonants combined with vowels, that is, syllables, never consonants alone. Thus it will be seen that one of the difficulties to be overcome in translating any given passage is to determine whether a group is used as an ideograph or a phonograph. But the greatest difficulty, and the one which for a long time made many learned men suspicious in regard to the trustworthiness of all translations of Assyrian inscriptions, is the fact, now fully established, that the same character as an ideograph often represents several different ideas, and as a phonograph several different syllables. Hence the correct interpretation in any case can be ascertained only by the most patient study and comparison of different inscriptions. For example, one group of three wedges stands in different inscriptions as an ideograph to represent the noun "country" and the verb "to take;" as a phonograph it represents the syllables *mat*, *lat*, *sat*, *kur*, *nat:* another group of three wedges differently arranged represents as an ideograph "light," "sun," "day," "sea;" as a phonograph the syllables *ut*, *tam*, *par*, *lah*. Fortunately the Assyrians themselves have come to our aid. Among the clay tablets discovered are a large number written in two vertical columns, the first of which contains ideographs, the second their meanings in phonographs. Other tablets are in three columns, the middle one generally containing the ideograph to be explained, the left-hand one its phonetic value, and the right-hand one its meaning in the Assyrian language. The Assyrians endeavored to remedy the ambiguity of their writing in a way of which the following is an example: When the character mentioned above is used to denote the sea (*tihamti*), a phonograph representing the syllable *ti* is placed after it; when it stands for the sun (*sansi*), it is followed by a phonograph denoting the syllable *si;* and when it denotes the light (*nara*), it is followed by one denoting the syllable *ra*. The Assyrian language is Semitic, and exhibits the chief characteristics of that family. Thus it has the emphatic *t* and *s;* forms the feminine in *t;* has conjugations (*kal*, *niphal*, *iftael*, &c.) corresponding to those found in one or another of the other Semitic tongues; and distinguishes the "construct state" of nouns. These are among the most marked characteristics of the Semitic languages. It appears to be more nearly related to the Hebrew than any other. The contents of these records relate to almost everything connected with the history, the religion, the laws, the social life, and the science of the nation: lists of kings, accounts of their achievements in peace and war, laws regulating the domestic relations, chronological and astronomical tables, lists of plants and animals, private contracts in regard to land, slaves, and the sale and exchange of property of all kinds; in fact, something in regard to almost every subject which can arouse our interest or excite our curiosity. Copies of vast numbers of them have been published, particularly by the British museum, under the superintendence of Rawlinson; and many have been published with commentaries and translations by Oppert, Ménant, and others. In the palace of Asshurnasirpal, king of Assyria about 900 B. C., in the city of Calah, the modern Nimrud, a large number of mural slabs were found by Layard, upon all of which was the same inscription in Assyrian cuneiform characters. Some of these slabs are now preserved in the libraries of several colleges in the United States. The "Dickinson Nineveh Gallery" of Amherst college contains some of them, which were procured for the college by the Rev. Henry Lobdell. Photographs of the inscription on one of these slabs, accompanied by an original transliteration in Roman letters and an original literal translation into English, by the Rev. W. H. Ward, a graduate of the college, were presented by him as a jubilee offering to the college on the occasion of its semi-centennial anniversary in 1871. The photographs and manuscript are now in the college. The inscription recounts, in the usual style of oriental exaggeration, the military achievements of the king and the building of his palace. This is probably the first translation of an Assyrian inscription made by an American scholar.— One of the most interesting contributions to the literature of this subject was made by Mr. George Smith, of the British museum, in 1871. It consists of the cuneiform text of all the historical inscriptions in the British museum relating to Asshurbanipal, king of Assyria about the middle of the 7th century B. C. The principal inscription is upon a ten-sided prism, and contains over 1,200 lines of cuneiform writing. Mr. Smith gives an interlinear English translation and commentaries. In this inscription are mentioned the conquest of Egypt by Esarhaddon, the father of Asshurbanipal, and the principal events of the reign of the latter. We also learn from it the Assyrian account of the kings of Egypt Tirhakah, Necho I., and Psammetichus I.,

COPY AND TRANSLATION OF THE FIRST TEN LINES OF CYLINDER A, IN THE BRITISH MUSEUM.



1. I am Asshurbanipal, descendant of Asshur and Beltis,
2. son of the great king of Bitriduti (or Eriduti),*
3. whom Asshur and Sin, the lord of crowns, from distant days,
4. the account of his name prophesied to the kingdom,
5. and in the body (of his mother was made to) rule Assyria.
6. Shamas, Vul, (and Ishtar in) their supreme power
7. commanded the establishment of his kingdom.
8. Asshur-ah-iddina (or Esarhaddon), king of Assyria, the father my begetter,
9. the will of Asshur and Beltis, the gods his protectors, fulfilled,
10. who commanded him to form my kingdom.

the Lydian kings Gyges and Ardys, the conquest of Babylonia, Susiana, and Arabia, and various other matters treated by the Greek historians. One of the most recent and in many respects most curious additions to our knowledge has also been made by Mr. Smith. In December, 1872, he read before the Biblical archæological society in London a paper describing a series of inscriptions upon tablets, originally at least twelve in number, and consisting entirely of legends relating to the deluge. Of these tablets some are missing, some are so broken and mutilated as to be unintelligible, and all are more or less injured. But the eleventh tablet, which gives the details of the story of the deluge, is the best preserved, and it contains nearly 300 lines of cuneiform writing. Mr. Smith gives an English translation of its contents. In the general features of its account of the deluge it agrees with that in Scripture. A great flood was sent upon the earth to punish men for their wickedness. One man, Sisit (the Xisuthrus of the Greeks), receives a divine warning and a command to build a huge ship, and to take into it a chosen few only of mankind, together with some of all other living things. The flood came, then subsided; the ship grounded upon a mountain; birds were sent out and returned twice, but the third time returned no more. Then Sisit went forth, built an altar, and made a sacrifice.



Fragments of a Tablet from which the Account of the Deluge was deciphered.

Such are the main points in which the inscription agrees with the Mosaic writings; but in almost all the details, where there is precision in the statements, the accounts differ, and the

* Supposed to have been the name of the harem of the palace of Nineveh.

inscription contains a mass of mythological and other fables, showing it to have been the production of an exceedingly superstitious people. In this, as in many other Assyrian inscriptions, while a consistent meaning can be made out, yet there is some doubt as to the words represented by the characters and some uncertainty as to the general result. Even Mr. Smith does not pretend to give the proper names with exactness. However, Sir Henry Rawlinson, who presided at the meeting before which Mr. Smith's paper was read, vouched for the accuracy of the translation, and ascribed to the legend which the inscription records an antiquity of 6,000 to 7,000 years B. C. But amid all that is doubtful, scholars are so far agreed on the interpretation of these inscriptions that we may expect important additions from this source to our knowledge of the ancient world. Thousands of inscriptions yet remain buried among the ruins of Assyria; and when they are exhumed and subjected to the searching criticism of modern scholars, Assyrian, like classical philology, may come to be regarded as a distinct, extensive, and important department of learning.—The literature of the subject of cuneiform inscriptions is already very extensive, and is rapidly increasing. The following works are perhaps the most useful, and contain abundant references to other sources of information: Fr. Spiegel, *Die Altpersischen Keilinschriften* (Leipsic, 1862); Ménant, *Exposé des éléments de la grammaire assyrienne* (Paris, 1868); Oppert, *Éléments de la grammaire assyrienne* (2d ed., Paris, 1868); F. Hitzig, *Sprache und Sprachen Assyriens* (Leipsic, 1871); Ewald, *Geschichtliche Folge der semitischen Sprachen* (Göttingen, 1871); Schrader, *Die Keilinschriften und das Alte Testament* (with chronological appendices and a glossary, Giessen, 1872), and *Die Assyrisch-Babylonischen Keilinschriften* (Leipsic, 1872); Rawlinson and Norris, "The Cuneiform Inscriptions of Western Asia" (3 vols., 1861–'70, lithographed for the British museum); George Smith, "History of Assurbanipal," cuneiform texts with translation (London, 1871), and "Phonetic Values of Cuneiform Characters" (1871); A. H. Sayce, "An Assyrian Grammar" (London, 1872); and Norris, "Assyrian Dictionary" (vols. i.–iii., London, 1868–'71).

CUNEO. See Coni.

CUNNINGHAM. I. Allan, a Scottish poet and miscellaneous writer, born at Blackwood, Dumfriesshire, in 1785, died in London, Oct. 29, 1842. He was of humble parentage, his family having lost its estate by taking the side of Montrose. He acquired from his father a love for old Scottish tales and ballads, and was sent to school till his 12th year, when he was apprenticed to a stonemason. In his 18th year, having already written several poetical pieces, he sought the acquaintance of Hogg, the Ettrick Shepherd, who describes him as at that time "a dark, ungainly youth, with a broadly frame for his age, and strongly marked manly features, the very model of Burns, and exactly such a man." Cromek, in gathering the remains of Nithsdale and Galloway song, engaged Cunningham for an assistant, who furnished materials for an octavo volume, which was published in 1810; but it soon appeared that he was himself the author of the most beautiful pieces in the collection. At the age of 25 he went to London, and during four years established a reputation by numerous contributions to periodicals. In 1814 he was selected by the sculptor Chantrey to be his foreman and confidential manager, in which position he remained till the artist's death. Some of his songs were declared by Scott to rival those of Burns. He wrote "Sir Marmaduke Maxwell" (1822), a wild drama founded upon border superstitions; several novels, as "Paul Jones," "Sir Michael Scott," "Lord Roldan," and "Traditional Tales;" the "Life of Burns" (1834), and the "Life of Sir David Wilkie" (1843); "The Maid of Elvar," a poem; "The Songs of Scotland, Ancient and Modern, with Introduction and Notes" (1826), which contains many of his own best poems; "The Lives of the most eminent British Painters, Sculptors, and Architects" (1830); and the literary illustrations to Major's "Cabinet Gallery of Pictures." His ballads and smaller poems are graceful, natural, airy, and eminently Scotch. **II. Alexander,** a soldier and author, son of the preceding, born Jan. 23, 1814. He became second lieutenant of engineers in 1831, and served in India from 1834, being employed in various important missions and engineering works, and reaching the rank of major general. In 1858 he became chief engineer of the Northwestern Provinces, and in 1870 archæological surveyor general of India. He has published "An Essay on the Arian Order of Architecture" (1846); "The Bhilsa Topes, or Buddhist Monuments of Central India" (1854); "Ladak, Physical, Statistical, and Historical" (1854); and voluminous reports on the antiquities of northern Hindostan. **III. Peter,** brother of the preceding, born in London, April 7, 1816, died May 18, 1869. He was appointed a clerk in the audit office in 1834, became chief clerk in 1854, and retired about 1860. He contributed to periodicals, and had the charge and arrangement of the works of art in the Manchester exhibition of 1857. He wrote an excellent "Handbook of London," and other interesting topographical works, and edited the poems of Drummond of Hawthornden, the "Works of Goldsmith," a new edition of Johnson's "Lives of the Poets," &c.

CUNNINGHAM, John, a British poet, born in Dublin in 1729, died in 1773. He was the son of a wine merchant, and adopted the stage as a profession, but without much success. He wrote several small volumes of poetry, distinguished by simplicity and sweetness.

CUPAR, a royal and parliamentary borough of Scotland, capital of Fifeshire, on the left bank

of the Eden, 10 m. W. of St. Andrew's; pop. in 1871, 5,105. The town has manufactures of coarse linens, corn, barley, and flour mills, and a flourishing academy. It is called Cupar Fife to distinguish it from Cupar Augus, Perthshire.

CUPEL, and Cupellation. See Assaying.

CUPID. See Eros.

CUPPING, a method of local abstraction of blood, through small scarifications, by the assistance of bell-shaped glasses exhausted of air. When the object is merely to draw blood to a part, for purposes of revulsion, the exhausted glass is used without incision of the skin; it is then called dry cupping. The old method of exhaustion was by burning a bit of paper or a few drops of alcohol in the glass, which was then immediately applied to the skin. A more convenient and certain exhaustion is now obtained by means of a small syringe attached to the cup; the risk of burning the patient is avoided, the locality may be carefully selected, and the pressure accurately graduated. If, after the blood is drawn to the part by a dry cup, it is desirable to deplete the vessels, the skin may be cut by a bistoury or lancet, or by an instrument called a scarificator; this consists of a square box of brass, in which are mounted from 6 to 16 blades, which are set and discharged by a spring; the depth of the incision can be exactly regulated, and the action is so instantaneous that very little pain is felt. From these little wounds the pump draws into the glass from 1 to 5 oz. of blood, according to its size. After sufficient blood has been drawn, a piece of adhesive plaster is put on to close the punctures and prevent suppuration. Dry cupping has been used with advantage in diseases of the brain and lungs, applied in the first case to the nape, shoulders, and arms, and in the second to the back and base of the chest; also in diseases of the eyes. The amount of blood taken by cups can be well measured; they are less disgusting than leeches, quite as effectual when they can be applied, and not liable to be followed by inflammation of the wounds; they are employed either after or in place of general bleeding. In pneumonia, pleurisy, and abdominal inflammations, and various local affections, they are applicable when venesection would be out of the question, and are generally preferable to leeches. Cups may be used to prevent the absorption of the virus in poisoned wounds and bites. M. Junod, in France, in 1838, invented a monster apparatus, capable of receiving the whole lower extremity, in which by means of a pump the limb could be either compressed or placed in a comparative vacuum; the derivative and revulsive effects of this apparatus were energetic, amounting if desired to the production of syncope.

CURAÇOA, Curaçao, Curazoa, or **Curassou,** an island of the Dutch West Indies, in the Caribbean sea, 46 m. N. of the coast of Venezuela; lat. 12° 3′ to 12° 24′ N., lon. 68° 47′ to 69° 16′ W.; length N. W. to S. E. 36 m., breadth 8 m.; area, 164 sq. m.; pop. in 1870, 21,319, of whom about 2,000 were Protestants and 1,000 Jews, the remainder Roman Catholics. It has a hilly surface, with rugged coasts, and is exceedingly barren. The climate is dry and hot, though tempered by sea breezes, and the island is visited by the yellow fever every six or seven years. Fresh water is scarce, and is obtained either from rain or deep wells. Severe droughts frequently occur; the soil is so poor that provisions are imported, and some of the products once cultivated, as indigo, cotton, and cacao, are now entirely neglected. Sugar, tobacco, maize, cochineal, cattle, horses, asses, sheep, and goats are raised; the tamarind, banana, cacao palm, orange, and various kinds of kitchen vegetables grow well; and from the lime is made the celebrated Curaçoa liqueur. Iron and copper ores exist, but are not worked. The trade is mainly with the United States, the exports to which in 1870 amounted to $353,000, of which goat, kid, and deer skins formed $225,000. The principal harbor is that of Santa Anna on the S. W. coast, one side of the narrow entrance to which is defended by Fort Amsterdam, while on the other stands Willemsted or Curaçoa, the capital of the island and of a government which includes this and the neighboring islands of Buen Ayre, Oruba (or Aruba), and Little Curaçoa. It is also the seat of a Catholic vicar apostolic, whose jurisdiction embraces nearly all of the Dutch West Indies.—Curaçoa was settled by the Spaniards in the 16th century, taken by the Dutch about 1630, captured by the British in 1798, restored to Holland at the peace of Amiens, again seized by England in 1807, and finally given up to the Dutch in 1814.

CURASSOW, a name given to two genera of birds of the order *gallinæ*, and the family *cracidæ;* the two genera are *crax* and *pauxi*, both peculiar to America. The curassows have the bill moderately long, strong, generally elevated at the base, with the culmen curved, and the sides compressed to the obtuse tip; the nostrils are lateral and large, with an opening partly closed by a crescentic or rounded membrane; the hind toe is long, and on the same plane with the others.—In the genus *crax* the bill is moderate; the wings short and rounded, with the sixth to the eighth quills equal and the longest; the tail long and rounded; the tarsal robust, longer than the middle toe, and covered in front by broad scales; the toes long, strong, and covered with prominent scales, the lateral toes being equal; the claws are moderate, compressed, and curved. Six species are described, of which the most interesting are: 1. The crested curassow (*C. alector*, Linn.), of a general black color, with the lower belly white, and the cere yellow; the head is ornamented with a crest of recurved and frizzled feathers, radiated, alternately white and black; the sides of the head and base of the bill are bare; at certain ages the body, wings, and tail are banded with white. It is 3 ft. long, about as large as a turkey. This species has frequently

been carried to Europe from Guiana, and is the one generally seen in collections; in addition to its pleasing appearance, it is mild and social in its manners, and affords a savory and



Crested Curassow (Crax alector).

nutritious article of food. It inhabits the forests of tropical America in large flocks, whose peaceable members seem not to fear man unless in the neighborhood of dwellings. The nest is very rude, placed upon dry branches on trees, and lined with leaves; the eggs are from two to six, white, resembling those of the turkey. Though living in the wildest localities, it exhibits a remarkable disposition to become tame, and flocks of them are frequently domesticated; they perch on roofs and high trees; they are easily reared, as almost any vegetable food agrees with them; maize, rice, bread, potatoes, and all kinds of fruits, are eagerly eaten by them. 2. The globose curassow (*C. globicera*, Linn.) is distinguished by a callous globular tubercle at the base of the bill, inclining backward, covered, like the base of the mandibles, with a bright yellow cere; the general color is black, with the vent and



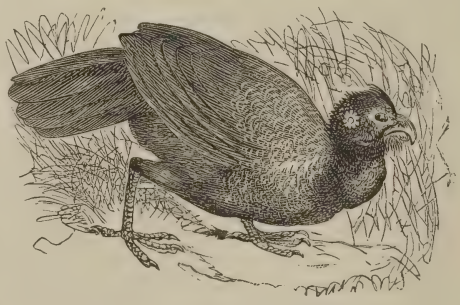
Red Curassow (Crax rubra).

tip of the tail white. This bird unites with the preceding and the next species, producing hybrids, which may be more or less continued by intermixture of the primitive stocks, presenting a very great variety of colors; from this has arisen many a supposed new species. 3. The red curassow (*C. rubra*, Linn.) has no tubercle on the bill, and has the region of the eyes feathered; the color of the under parts is a bright chestnut, with the head, neck, and tail banded with black and white, and occasionally with yellow. 4. The wattled curassow (*C. carunculata*, Temm.) has the head black, the belly chestnut, and the cere and



Cushew Curassow (Pauxi galeata).

naked parts red, with a black crest. The other species are *C. globulosa* (Spix), and *C. urumutum* (Spix).—In the genus *pauxi* the bill is short and the culmen is elevated and much curved; the sixth and seventh quills are equal and the longest; the greater part of the head is covered with short velvety feathers. Three species are described: 1. The cushew curassow (*P. galeata*, Lath.), with a hard and thick oval blue tubercle at the base of the bill; general color black, but about the vent and the end of



Razor-billed Curassow (Pauxi mitu).

the tail white; it is about the size of a turkey, and, like the other curassows, is readily domesticated. 2. The razor-billed curassow (*P. mitu*, Linn.) is smaller than the preceding, being about 2½ ft. long; of a black color, with the belly chestnut. 3. The *P. tomentosa* (Spix).—The curassows (or hoccos, as they are sometimes called) and the pauxis, with the *penelope* or guan, are to South America what the turkey is to North America; in the state of domesti-

cation they exhibit the same traits and habits as ordinary poultry; they are polygamous, many females being attached to a single male; they are easily acclimated in Europe, and of course would be in the United States; they live in peace with other gallinaceous birds, and rarely utter any discordant cries. The flight of the curassows is heavy and ill sustained; but they run with great rapidity, carrying the tail pendent. According to Sonnini, their cry may be represented by the syllables "po-hic;" in addition to this they make a dull humming sound, as does the turkey, variously modified by the remarkable sinuosities of the windpipe. The trachea in the *cracidæ* differs from that of other gallinaceous birds in its remarkable circumvolutions. In the curassows proper they take place at the lower part of the neck, or in the thoracic cavity; in the pauxis they are directed on the muscles of the breast, immediately under the integuments; but in none of them does the trachea form its convolutions in the interior of the breast bone, as in the swans. In the crested curassow the trachea is flattened, chiefly membranous, with the rings entire and very distant from each other; it describes a broad curve between the bones of the furca, goes back two inches over the muscles of the neck, and then makes a second circumvolution, from which it takes the usual form as far as the lower larynx, where it is suddenly dilated. In the *pauxi*, the trachea at the opening of the thorax ascends over the right great pectoral muscle at a distance from the crest of the breast bone, continues along this muscle, and forms a curve passing somewhat behind this bone; it then proceeds over the left pectoral muscle, making a turn on the side of the breast bone, passing behind it above the first curve; then it turns again to the right, and passes over the right clavicle into the cavity of the chest. The windpipe may be shortened or lengthened by muscular action. This conformation is doubtless connected with the loud and sonorous voices of these birds. The curassows are extensively distributed over America, being found in the Guianas, Brazil, Paraguay, Mexico, Central America, and probably some of the West India islands.

CURATE (Lat. *curare*, to take care of, so called from having the care of souls), the lowest degree of clerical rank in the church of England. The curate is the substitute or assistant of the actual incumbent, but there are perpetual curacies, where there is neither rector nor vicar, but the tithes having been appropriated, the lay appropriator is obliged to appoint a curate at a stipend. In large parishes more than one curate is usually appointed. There are also curates in chapels of ease, and in the modern foundations known as district churches, which belong to ecclesiastical subdivisions within parishes, and are subordinate to the rector or vicar in some matters, though independent in others. By act 1 and 2 Victoria the lowest stipend required to be paid a curate is £80, the sum rising in proportion to the population of the cure to £150.

CURCULIO, or **Plum Weevil,** a small beetle of the family *curculionidæ*, and genus *rhynchænus* (Fabr.) *R. nenuphar* (Herbst). The perfect insect is about one fifth of an inch long, dark brown, variegated with white, yellow, and black spots; shaken from a tree it looks like a dried bud, and when disturbed remains motionless, feigning death. It has a long curved snout, bent under the thorax when at rest, which is used to make the crescent-shaped cut in which the egg is deposited; the jaws are at the end of the snout; the thorax is uneven, and the wing cases are ridged and humped, covering two transparent wings by which the insect flies from tree to tree; behind the humps is a yellowish white spot; each thigh has two small teeth on the under side. These beetles appear between the first of April and the middle of June, according to the forwardness of vegetation. When the plums are about the size of peas, the female begins to sting the fruit, making an incision in which she deposits a single egg; she goes from plum to plum, placing an egg in each until her store is exhausted, hardly a fruit escaping when these insects are abundant. The grubs, resembling whitish, footless maggots, with a rounded, distinct, light brown head, are hatched by the heat of the sun, and immediately burrow obliquely to the stone; the fruit, weakened by the gnawing of the grub, becomes gummy, and falls to the ground before it is ripe; by this time the grub has attained its full size, quits the fruit, and enters the ground between the middle of June and the middle of August in New England; it there becomes a pupa, and comes forth a perfect insect in about three weeks. Several broods may be hatched in a season, the latest remaining as pupæ in the ground all winter; some good authorities believe that the curculio passes the winter above ground in the perfect state, and therefore that any operations in the soil at this season can be of no advantage in guarding against its ravages. Not only plums, but nectarines, apricots, peaches, cherries, apples, pears, and quinces, are attacked by the curculio. The grubs are sometimes found in excrescences on plum trees, in which the beetle, finding in them an acid resembling that of the fruit, has deposited the eggs, and hence has often been wrongfully ac-



CURCULIOS.—1. White Pine. 2, 3. Plum.

cused of producing these swellings. As the curculio is a good flier, efforts to prevent its ascending the trunks of trees must be of no avail. Among remedies which have been found successful on a small scale, the following deserve mention: Sudden jars of the limbs in the morning and evening in June, when they are depositing their eggs, will cause many to fall upon sheets spread beneath the trees, from which they may be collected and destroyed; scattering air-slacked lime in damp days on the trees once a week for six weeks, beginning soon after the fruit is discoverable; sprinkling flour of sulphur over them about the time the fruit is setting, and once or twice afterward; applying by means of a syringe a whitewash solution, rendered sticky by a little glue. All fallen fruit should be destroyed by heat, that the grubs may not escape into the ground, and give rise to a new generation; diseased excrescences should be cut out; the admission of swine and poultry about the trees will cause many of the larvæ to be devoured before they can enter the ground.—The gray-sided curculio is pale brown, from one eighth to one fifth of an inch long; the larvæ live in the trunks of the white oak, on which the beetles may be found about the beginning of June. Other *curculionidæ* destroy pine trees, and infest various kinds of nuts in this country. In Europe there are many species which as yet are not found here. The most destructive of the family are those which attack wheat and other grains. (See Weevil.)

CURES, in ancient geography, a town of the Sabines, 25 m. N. E. of Rome, and 3 m. from the left bank of the Tiber. In the time of Romulus, according to tradition, the people of Cures were united with the inhabitants of Rome, whence the latter were afterward designated Quirites. Tatius, the colleague of Romulus, and Numa Pompilius, the second king of Rome, were both natives of Cures. The city fell into decay at a very early period, was revived by Sulla, and was at last destroyed by the Lombards in the 6th century. The modern village of Correse occupies its site.

CURETES, priests and ministers of Cybele or Rhea. The rites and orgies with which they celebrated the worship of their deity were almost identical with those of the Corybantes.

CURFEW, the evening bell (spelled also curfeu, carfou, and courfeu, a corruption of Fr. *couvre-feu*), so called from ringing of the bell at evening having formerly been the signal to extinguish fire on the hearth and remain within doors. The practice was common in the middle ages. Polydore Vergil states that William the Conqueror introduced it into England as a measure of police. The obligation of extinguishing fire and light on the ringing of the curfew was abolished in England by Henry I. in 1100, but the evening bell itself was continued. We find entries in the municipal records of "ryngyng ye curfewe," "a man to ring the curfew," "new rope for the curfew bell," and so on, as late as the beginning of the 16th century. The evening bell and prayer bell, still tolled at stated hours in some places, had their origin in the *couvre-feu*.

CURIÆ, the name of certain divisions of the people of ancient Rome. Romulus divided the whole population into three tribes, and each tribe into ten curiæ. Although there were afterward 35 tribes, the number of curiæ remained always the same. At first they possessed considerable political importance, but from the time when Servius Tullius instituted the centuries their influence became slight. The place where a curia met, as well as the meeting place of the senate, was also called curia. In the Roman provincial cities, the name was applied to the body which administered the affairs of the town, and was responsible to the Roman government for the taxes. In the middle ages the name was also given to a solemn assembly of the counts and prelates of the empire. It is also applied, though rather figuratively, to the highest sphere of the papal government.

CURIO, C. Scribonius. I. A Roman general and statesman, son of a celebrated orator of the same name, died in 53 B. C. He was with the consuls when the seditious tribune L. Apuleius Saturninus was murdered in 100 B. C. In 90 he was tribune of the people, and afterward served under Sulla in Greece, in the war against Archelaus, general of Mithridates, and at the capture of Athens conducted the siege of the acropolis. He was prætor in 82, and in 76 consul with Cn. Octavius. He was afterward given Macedonia as his province, and waged war three years in the north against the barbarians, being the first Roman general to advance to the Danube. For these successes he celebrated a triumph in Rome in 71. He was an opponent of Julius Cæsar and a friend of Cicero, whom he seconded in his attack upon Catiline. In 57 he was appointed pontifex maximus. He was ambitious of being an orator, but his abilities were not great. **II.** A son of the preceding, died in 49 B. C. Cicero knew him from childhood and tried to influence him for good; but Curio, with excellent natural talents, was indolent and dissipated. He married Fulvia, afterward the wife of Antony, and by her had a daughter as dissolute as her mother. He followed his father into the party of Pompey, though at heart inclined in favor of Cæsar. He was quæstor in Asia, and was tribune for the year 50. Being greatly in debt, he abandoned the Pompeian party upon condition that Cæsar should pay his debts, pretending at first to be neutral. When Cæsar was called upon to lay down his power before coming to Rome, Curio proposed that Pompey should do the same, and upon Pompey's refusal declared against him. He remained in the senate, and secured a vote of the majority that both the proconsuls should lay down their power. Failing in his efforts to prevent the levying of an army by

Pompey, he fled to Cæsar at Ravenna, and urged him to march upon Rome. He returned to the senate with a message from Cæsar, but again fled in the night with Antony and Q. Cassius, collected the troops stationed in Umbria and Etruria, and led them to Cæsar, who made him proprætor of Sicily in 49. Here he crushed the party of Pompey, and drove away Cato; then crossing into Africa, he fought, at first successfully, against Juba and the Pompeian general P. Attius Varus; but he lost largely by desertion, and besieging Utica he was attacked by Juba and killed in the ensuing battle, when his army was annihilated. He was a man of boldness and of great natural talents, especially as an orator, but unscrupulous and profligate to the last degree.

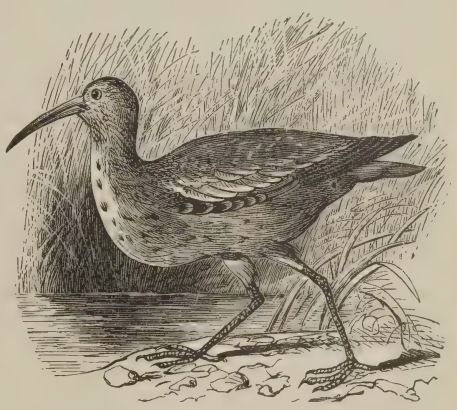
CURIUS DENTATUS. See DENTATUS.

CURLEW, a bird of the order *grallatores*, family *scolopacidæ*, subfamily *limosinæ* (which includes both curlews and godwits), and genus *numenius* (Linn.). The bill is long, slender, curved from the base, with sides compressed and grooved; the upper mandible projecting over the lower, and obtuse; wings long and pointed, the first quill the longest; tail short and even; tarsi long and slender; toes moderate, lateral ones unequal and united at their bases; hind toe long, slender, and partly resting on the ground; claws short and dull. There are nearly 20 species described, scattered over the temperate regions of the world in winter, and going north in summer; they frequent the borders of the sea, and muddy and sandy shores, sometimes visiting moors and marshy plains, in search of worms, larvæ, crustacea, and mollusks, which they extract from the moist ground, often from under water, with their long bills; they also eat berries from the fields and woodlands. The nests are formed on the ground in holes, lined with



Long-billed Curlew (Numenius longirostris).

grass, and the eggs are generally four in number. The long-billed curlew, or sickle-bill (*N. longirostris*, Wils.), is the largest American species, and may readily be distinguished from all others by the length of the bill, which is from 7 to 9 in.; the total length to end of claws is 29 in., the extent of wings 40 in., and the weight about 1¾ lb. The general color of the plumage is pale reddish brown, the head and neck streaked with dusky; the upper part of the throat, and a band from the bill to the eye, light buff; above marked with blackish brown, tail barred with the same; abdomen plain yellowish red; feet bluish. Though found in the north, it is most abundant at the south, where it resides all the year and breeds; it feeds during the day in the marshes, retiring to the shores in large flocks at night; the favorite food is small fiddler crabs. They are easily shot, though rather tenacious of life, frequenting the same resting place for some time; they readily answer the fowler's call. The flesh is tough and fishy, and decidedly inferior to the smaller species. They are occasionally seen as far north as Boston.—The Esquimaux curlew, sometimes called dough bird (*N. borealis*,



Esquimaux Curlew (Numenius borealis).

Lath.), has a bill about 2¼ in. long, and tarsi 1⅝ in.; the length to end of claws about 17 in., extent of wings 28 in.; weight ½ lb. The upper plumage is dusky brown, marked with numerous spots of light brownish yellow; a line of white from the bill to the eye; upper part of head brownish black, with streaks and a median line of grayish or yellowish white; throat white; neck and breast yellowish gray, with longitudinal marks and spots of dusky; abdomen dull yellowish white; flanks with brown bars; tail and its upper coverts pale grayish brown, with deep brown bars, and brownish white tip; primaries dark brown, first shaft white with dusky tip. The females very closely resemble the males. In the New England and middle states this bird arrives from the north in the latter part of August, remaining through October, when it moves off to the south in flocks, going north again to breed in the spring. In Labrador its favorite food is the curlew berry, a small black fruit growing on a creeping shrub an inch or two

high; in the open grounds in the vicinity of the sea, it feeds on insects, especially grasshoppers, seeds, worms, and berries. In the autumn they are very fat, whence their common name, and are considered great delicacies. They are not shy, running, squatting, and flying very much like a snipe.—The Hudsonian or short-billed curlew (*N. Hudsonicus*, Lath.) is considerably larger than the last named species. Its bill is about 4 in. long, the total length to end of claws 21 in., extent of wings 33 in., and weight a little over a pound. The upper part of the head is deep brown, with a central and two lateral whitish lines; between the bill and eye, and behind the latter, brownish; the neck pale yellowish gray, with longitudinal brown streaks; chin grayish white; upper parts generally blackish brown, with numerous brownish white spots; wings and rump lighter; tail and its upper coverts with brown and yellowish gray bars, the former white-tipped; primaries brownish black; lower parts grayish white, the sides cream-colored and barred with grayish brown; shaft of first quill white. This species often associate with the sickle-bill, and arrive in large flocks on the New Jersey shore in May from the south; they soon move northward to breed; they return toward the last of August, remain a few weeks, and then proceed to the south to spend the winter. The habits and food are about the same as in the other species. The flight is high and rapid, and in their migrations accompanied by a constant whistling; they fly steadily, answer the sportsman's whistle readily, and are easily shot; they are considered excellent eating. Like the long-billed curlew, this species will linger around its wounded companions until many of a flock are killed.—The largest of the European curlews is the *N. arquatus* (Linn.), of the size of a capon; the general color is brown, with the edges of the feathers whitish; the rump is white, and the tail barred with white and brown. It is a well flavored species. The whimbrel (*N. phæopus*, Linn.) is about half the size of the preceding, which it resembles in its plumage.

CURLING, a favorite Scottish game, played on the ice with large spherical stones, flattened so that their length shall be equal to twice their thickness. They are carefully selected, so that they shall not be liable to break, have their under side polished, and vary in weight from 30 to 45 lbs. They have handles of wood or iron by which they are impelled over the ice. The path in which the stones move is called the *rink*, and may be from 30 to 50 yards long, and 8 or 9 ft. in breadth. At each end of the rink a mark or hole is made in the ice, called the *tee*. The players are divided into two parties, and each person endeavors either to leave his own stone as near the tee as possible, or to remove those of the opposite party, or to guard those of his own side. When all have played, the one nearest the tee counts one, and the second, third, &c., if of the same side, count each one more. The side which first scores 31 wins.

CURRAN, John Philpot, an Irish orator, born at Newmarket, county Cork, July 24, 1750, died in Brompton, a suburb of London, Oct. 14, 1817. His parents were persons of cultivation and refinement, and took great pains with his education. He entered Trinity college, Dublin, in 1769, with a view of preparing for the church, but afterward determined to adopt the profession of the law, and in 1773 was entered as a student of the Middle Temple, London. The next year he married the daughter of Dr. Creagh of Dublin, and in 1775 he was called to the Irish bar. He was distinguished for his social qualities, and formed a club under the name of the Monks of St. Patrick, composed of the leading liberals of Dublin. He was often in great pecuniary embarrassment; but Lord Kilwarden, his political opponent but life-long personal friend, threw business in his way, and he soon had a large and lucrative practice, becoming the most popular barrister of his time. In 1782 he was returned to the Irish parliament as member for Kilbeggan, where his attacks upon the government involved him in two duels, which however terminated harmlessly. His eloquence was bold, impassioned, and original, designed to move the feelings rather than to convince by argument. His personal appearance was not prepossessing. His look was soft and boyish. His voice was not naturally good, but he improved it by careful training. In the height of his popularity his wife eloped. He obtained a verdict against her seducer, but would not touch the damages awarded; he even allowed her a stipend, and went to London to see her when she was supposed to be dying. He was an ardent supporter of Catholic emancipation and liberal principles generally. His most brilliant orations were made in the courts in the defence of persons charged with political offences. His most noted speeches were those in defence of Theobald Wolfe Tone, Major Rowan, Oliver Bond, the brothers Shears, Jackson Finney, and Finnerty. He was strongly opposed to the union of Ireland with Great Britain, and after its accomplishment in 1800 he thought of emigrating to the United States. In 1803 he made one of his greatest speeches in defence of Owen Kirwan. The death of Pitt in 1806 having thrown the power into the hands of Fox and the liberals, Curran accepted the office of master of the rolls in Ireland, although he desired that of attorney general. The position was not suited to him, and from this time until his death he was subject to great dejection of spirits. In 1814 he exchanged his office for a pension of £2,700. He resided chiefly in his mansion at Brompton, where he enjoyed the society of Sheridan, Horne Tooke, Lord Erskine, the prince regent, and other distinguished men. William Godwin and Thomas Moore were his devoted friends. He was con-

sidered one of the wittiest men of his age. In 1817 he had an attack of apoplexy, and on Oct. 8 a second fit, of which he died the week following.—His speeches have been often published. See "Memoirs of the Legal, Literary, and Political Life of the Rt. Hon. John Philpot Curran," by William O'Regan (1817), and "The Life of the Right Hon. John Philpot Curran," by his son William Henry Curran (1819).

CURRANT (*ribes*, Linn.), the name of a small, valuable, and well known garden fruit, of which there are numerous varieties. Two principal species are commonly known, but there are several others. The *R. rubrum* (Willd.), according to Persoon, grows spontaneously in Sweden and in the northern parts of England, and is the origin of the garden kinds. It bears abundance of semi-transparent red berries in racemes, which diminish in size at the apex of the bunch. There is a white-fruited variety, more esteemed by some on account of its less acid juice. Great improvements have been made on these fruits by repeated experiments, and not only has the plant been rendered more robust, but the size of the berries has been increased. Of the many sorts, the red Dutch and the white Dutch, known also under many synonymes, have stood high in the estimation of practical gardeners. Knight succeeded in raising some improved kinds from seed, favorably known and bearing his name. It has been thought that the red currant is a native of North America, an opinion founded on its identity with the *R. albinervium* of Michaux. According to the "Flora of North America," the red currant appears to be "abundant in our northern latitudes, agreeing in every respect with the European form."



Red Currant.

It occurs throughout Canada to the mouth of Mackenzie river, at Sault Ste. Marie, and at the sources of St. Croix river (Torrey and Gray). It has been noticed growing wild on the rocky banks of the Winooski in Vermont. Josselyn, who wrote in 1672, makes mention in his "New England Rarities" of "red and black currants." The black currant (*R. nigrum*,



Black Currant.

Lam.), differing from the common currant in the great size of the plant, in smoother leaves, in flower and in fruit, also in possessing a powerful aromatic principle with proportionately less acidity, has by successive experiments become ranked with the most valuable of the smaller garden fruits. The variety known as the black Naples has larger berries than any other, and is considered the best. The fetid currant (*R. prostratum*, L'Héritier), with pale red and bristly fruit, exhaling, as well as the leaves, a disagreeable odor, grows on mountain sides and in cold woods at the northward, reaching as far as Lake Superior and the Rocky mountains. The thirsty wayfarer and the hunter, on meeting with its berries, find them not too unpleasant for refreshment. The *R. floridum* (L'Hér.), with rather large yellow-greenish flowers, and with smooth, black fruit, occurring in woods from Canada to Kentucky, is our native black currant, but is inferior in value to the European species. The Missouri currant (*R. aureum*, Pursh) is remarkable for its early yellow blossoms, exhaling a delicious, spicy odor, and considered a highly ornamental shrub. The red-flowering currant (*R. sanguineum*, Ph.), from western America, and abundant among rocks along the streams throughout Oregon, is a very beautiful shrub, bearing clusters of light crimson blossoms, which appear early in spring. Its fruit is insipid, but its flowers recommend it for the garden. Another, with flowers not so brightly colored (*R. malvaceum*, Sm.), has been noticed as a native of California. The genus *ribes*, embracing the gooseberries, comprises in North America something like 28 distinct species.—The propagation of the currant is easy, as it will grow in almost any garden soil, in the

open sun or in the shade of fences, where the fruit is longer in ripening but still sure. The best mode is, never to allow suckers taken from the roots of old plants to be used for new planting out; but to employ well ripened, straight, and stout shoots, removing all the buds or eyes from the lower portions which are to be inserted in the soil, which will prevent future suckers from springing up around the stem. Sometimes, after the stem has been trained upright for two or three feet, the branches are spread thinly upon a low espalier; or, in case this is not used, a thin, spreading head is carefully grown. All superfluous wood, as it makes its appearance, is removed, and about midsummer the ends of the fruit-bearing branches are pinched off, in order to allow the fruit to swell and increase. But the currant will reward the least degree of attention that is given to it.—The juice of the currant contains sugar and malic acid, to which is owing its pleasant flavor. Currant wine is considered a valuable beverage, and for preserves and tarts, or for the dessert, currants are especially esteemed. An excellent jelly is prepared from them, and for other domestic purposes their reputation is well known. The fruit of the black currant is far less esteemed, and to many persons is positively disagreeable. A jelly made of it is used for hoarseness or sore throat, and lozenges made of the berries, and especially of their skins, are of much service in pectoral complaints. A wine is made in Russia from the black currant berries, and in Siberia the leaves, dried and mixed with souchong, are made into a drink resembling in flavor green tea. The fruit, leaves, and wood are tonic and stimulant. —The word currant is said to be a corruption of Corinth, the original place whence the small raisins were brought known as the currants of commerce. (See Raisin.)

CURRENCY. See Money.

CURRENT RIVER, an affluent of Black river, rises in Texas co., Missouri, and has a S. E. course of over 250 m. to near Pocahontas, Randolph co., Arkansas. It is navigable by flatboats, and abounds in excellent fish. Jack's Fork is its principal branch.

CURRENTS. See Atlantic Ocean.

CURRIE, James, a Scottish physician, born at Kirkpatrick-Fleming, Dumfriesshire, May 31, 1756, died at Sidmouth, Devonshire, Aug. 31, 1805. In early life he went to Virginia, but returned after the breaking out of the revolution, commenced the study of medicine at Edinburgh, graduated at Glasgow in 1780, and began to practise in Liverpool. He applied affusions of cold and tepid water to the cure of disease, and published "Medical Reports on the Effects of Water, cold and warm, as a Remedy in Febrile Diseases" (2 vols., 1797 and 1804; 5th ed., 1814). Besides several other medical works, he wrote "A Letter, Commercial and Political, to William Pitt," under the assumed name of Jasper Wilson, which attracted much attention. In 1800 he published the first collected edition of the works of Robert Burns, in 4 vols., which has been frequently reprinted.

CURRITUCK, the N. E. county of North Carolina, bordering on Virginia, named from a tribe of Indians who formerly occupied the territory; area about 200 sq. m.; pop. in 1870, 5,131, of whom 1,140 were colored. It embraces several islands separated from the mainland by Currituck sound. The surface is level, and the soil sandy. The area has recently been somewhat diminished by the taking of a portion to form Dare county. The chief productions in 1870 were 270,699 bushels of Indian corn, 14,380 of Irish and 69,708 of sweet potatoes, and 64 bales of cotton. There were 711 horses, 1,154 milch cows, 2,513 other cattle, 2,409 sheep, and 10,012 swine. Capital, Currituck Court House.

CURRY, a very highly seasoned, aromatic condiment, originally prepared in the East Indies. It derives its name from the plant which forms the basis of the preparation, the *curcuma*, a genus of *zingiberaceæ*, which furnishes the turmeric of commerce. The species used is the *curcuma longa*, and a variety of it called *C. rotunda*. Turmeric was formerly quite popular as a medicinal dietetic article, and had the reputation of giving tone to the digestive organs. The small proportion, however, which is used in some of the forms of curry makes it often an unimportant ingredient. In the East the mixed ingredients forming the powder are hawked about the country as an article of merchandise. It is prepared for use by the consumer by mixing with fresh acid vegetables or their juices; and the superiority of the East Indian over the European curries is said to be owing to this mode of preparation. Soyer has been censured for advising, in his "Modern Housewife," the admixture of sugar with curry. The Ceylon curry stuff, according to Simmonds's "Dictionary of Trade Products," consists of "a piece of green ginger, a few coriander and cardamom seeds, one dry capsicum pod, six or eight black pepper corns, two cloves of garlic, six small onions, half a cocoanut, half a lime, a small piece of turmeric, and half a dessert spoonful of butter, well mixed together." The following table contains five recipes for making curry:

INGREDIENTS.	1.	2.	3.	4.	5.
Turmeric	6	4	6	3	2
Black pepper	5	4	2	2	½
Cayenne pepper	1	1	..	½	6
Ginger root	..	2	3	..	½
Fenugreek	3	2	..	1	½
Cumin seeds	3	2	2	4	..
Coriander seeds	..	6	8	12	6
Cardamom seeds	..	..	½	½	..
Pimento	..	..	½	½	½
Cinnamon	..	..	..	½	½
Cloves	..	..	..	½	1
Nutmeg	..	..	..	..	½

CURRY, the S. W. county of Oregon, bounded S. by California, W. by the Pacific, and watered

by Rogue river and other streams; area, 1,600 sq. m.; pop. in 1870, 504, of whom 12 were Chinese. Cape Blanco, the westernmost point in the state, is in this county. Copper and some gold are found. The fisheries of the rivers and coast are productive. Timber is abundant, and there is some good soil. The chief productions in 1870 were 1,821 bushels of wheat, 1,274 of Indian corn, 2,601 of oats, 1,236 of peas and beans, 4,319 of potatoes, 149 tons of hay, and 24,110 lbs. of wool. There were 373 horses, 925 milch cows, 2,350 other cattle, 7,722 sheep, and 635 swine. Capital, Ellensburg.

CURRY, Daniel, D. D., an American clergyman and journalist, born near Peekskill, N. Y., Nov. 26, 1809. He graduated at Wesleyan university in 1827, and was elected principal of the Troy conference academy, West Poultney, Vt. In 1839 he was called to a professorship in the Georgia female college, at Macon, Ga. In January, 1841, he joined the Georgia conference, and three years later he was transferred to the New York conference, and filled important stations in New York city and vicinity. In 1854 he was elected president of Indiana Asbury university. In 1857 he returned to New York, and subsequently was stationed successively in Brooklyn, Middletown, Conn., New Rochelle, and New York city, till 1864, when he was elected editor of the "Christian Advocate and Journal," New York, for four years. In May, 1872, he received his third successive appointment to this position. He has edited Southey's "Life of Wesley," and published a "Life of Wycliffe" and the "Metropolitan City of America."

CURRYING. See LEATHER.

CURSOR, Papirius. See PAPIRIUS.

CURTESY, the estate which at the common law the surviving husband has in the estates of inheritance of which the wife died seized. In order to this estate it is necessary that the relation of marriage should continue until the wife's decease, and that issue of the marriage should be born alive which by possibility might have inherited the estate; and then the husband surviving shall have a freehold estate for his life. The Scotch law is similar. The sweeping terms employed in some of the American statutes, passed to secure to married women the control of their property, have probably had the effect to abolish this estate in some of the states.

CURTIS. I. Benjamin Robbins, an American jurist, born in Watertown, Mass., Nov. 4, 1809, died in Newport, R. I., Sept. 15, 1874. He graduated at Harvard college in 1829, was admitted to the bar in 1832, and commenced practice at Northfield, but soon removed to Boston, where he secured a high rank and extensive business. He was remarkable for the extent and readiness of his attainments, the clearness and accuracy of his statements, and his vigorous grasp of logic. Upon the death of Judge Woodbury he was appointed a judge of the supreme court of the United States in September, 1851, which office he resigned in 1857. He afterward resumed the practice of his profession in Boston, and frequently appeared in important cases before the supreme court of the United States in Washington and in other parts of the country. Few distinguished lawyers in our country have devoted themselves so exclusively to their profession as Judge Curtis. He was for two years a member of the house of representatives in Massachusetts, but he took very little part in politics. In 1868 he was one of the counsel that defended President Johnson against the charges of impeachment, and made an argument which was widely commended for its legal soundness and clearness. He published "Reports of Cases in the Circuit Courts of the United States" (2 vols., Boston, 1854); "Decisions of the Supreme Court of the United States," with notes and a digest (22 vols., Boston); and a "Digest of the Decisions of the Supreme Court of the United States," from the origin of the court to 1854. **II. George Ticknor,** an American lawyer and juridical author, brother of the preceding, born in Watertown, Mass., Nov. 28, 1812. He graduated at Harvard college in 1832, was admitted to the bar in 1836, and was engaged in the practice of the law in Boston till 1862, when he removed to New York, where he has since continued his professional labors. While in Boston Mr. Curtis held the office of United States commissioner, and as such, in 1851, returned to his master a fugitive slave named Thomas Sims, for which act he was severely denounced by the abolitionists. He has made several valuable contributions to the literature of his profession, including treatises on the "Rights and Duties of Merchant Seamen" (1844), on the "Law of Copyright" (1847), and on the "Law of Patents" (1849; 2d ed., 1854; 4th ed., 1873). He has also compiled a volume of "Equity Precedents," a digest of English and American admiralty decisions, and two volumes of the series of digests of the reports of the United States published by Little, Brown, and co. He has also published "Commentaries on the Jurisprudence, Practice, and Peculiar Jurisdiction of the Courts of the United States" (2 vols. 1854–'8), which was highly commended by Chief Justice Taney, and a "Life of Daniel Webster" (2 vols., New York, 1870). But the work by which he is best known is a "History of the Origin, Formation, and Adoption of the Constitution of the United States" (2 vols., 1855–'8). Mr. Curtis served for two or three years as a member of the Massachusetts house of representatives, but he has allowed politics to interfere but little with the labors of his profession, and his historical and constitutional investigations.

CURTIS, George William, an American author, born at Providence, R. I., Feb. 24, 1824. He received his early education in a private school at Jamaica Plain, Mass. At the age of 15 he removed with his father from Providence to

New York, where for a year he was a clerk in a mercantile house. In 1842 he went with his elder brother to reside at Brook Farm, in West Roxbury, Mass., where he passed a year and a half in study and agricultural labor; after which he went to Concord, Mass., and with his brother spent 18 months there, living with a farmer, and both taking part regularly in the ordinary work of the farm, and afterward for six months tilling a small piece of land on their own account. In 1846 Mr. Curtis went to Europe, and after a prolonged stay in Italy and Berlin travelled in Egypt and Syria. In 1850 he returned to the United States, and published his first book, "Nile Notes of a Howadji." He soon after joined the editorial staff of the "New York Tribune," and in the summer of 1851 wrote a series of letters to that journal from various watering places, which were afterward collected in a volume under the title of "Lotus Eating." His second book, however, was "The Howadji in Syria," published in 1852. In the autumn of 1852 "Putnam's Monthly" was commenced in New York, of which Mr. Curtis was one of the original editors, and with which he continued connected till the magazine ceased to exist. In the mean time it had passed into the hands of the firm of Dix, Edwards, and co., in which Mr. Curtis was a special partner, pecuniarily responsible, but taking no part in its commercial management. In the spring of 1857 the house was found to be insolvent for a large amount, and Mr. Curtis sank his private fortune in the endeavor to save its creditors from loss, which he finally accomplished in 1873. Portions of his contributions to the magazine were subsequently published under the titles of "The Potiphar Papers" (1853) and "Prue and I" (1856). As a lyceum lecturer, upon which field of labor Mr. Curtis entered in 1853, he has met with great success. He has delivered several orations and poems before literary societies, and holds a high rank as a popular orator. In the presidential canvass of 1856 he enlisted with great zeal as a public speaker on behalf of the republican party. In the winter of 1858 he advocated the rights of woman in a lecture entitled "Fair Play for Women." To the current literature of the day he has been a constant contributor since 1853, through "Harper's Monthly," and since the autumn of 1857 through "Harper's Weekly" newspaper, of which journal he is now the principal editor. In 1858–'9 he wrote for this paper a novel entitled "Trumps," which was published in a volume in 1862. Upon the establishment of "Harper's Bazar" in 1867, he began a series of papers under the title of "Manners upon the Road," which was continued weekly until the spring of 1873. In 1871 President Grant appointed him one of a commission to draw up rules for the regulation of the civil service; and he was elected chairman of the commission and of the advisory board in which it was subsequently merged. In March, 1873, he resigned because of essential differences of views between him and the president in regard to the enforcement of the rules. Mr. Curtis was a delegate to the republican national conventions of 1860 and 1864, which nominated Mr. Lincoln; and in the latter year he was the republican candidate for congress in the first district of New York, but was defeated. In 1862 President Lincoln offered him the post of consul general in Egypt, which he declined. In 1867 he was elected one of the delegates at large to the constitutional convention of New York, in which he was chairman of the committee on education. In 1868 he was a republican presidential elector. Since 1864 he has been one of the regents of the university of the state of New York.

CURTIUS. I. Ernst, a German archæologist and historian, born in Lübeck, Sept. 2, 1814. He studied at Bonn, Göttingen, and Berlin, travelled in Greece and Italy, and was appointed preceptor of Frederick William, the present crown prince of Germany. In 1844 he became professor at the university of Berlin, and afterward of classical philology and archæology at Göttingen, which post he retained till 1865. In 1870 he was made chief director of the Berlin museums. His principal works are *Peloponnesos* (2 vols., 1851–'2), *Die Ionier vor der ionischen Wanderung* (1855), *Griechische Geschichte* (3 vols., 1857–'67), and *Attische Studien* (1863–'4). All these have been translated into English, the history of Greece by A. W. Ward (5 vols., 1868–'73). In 1872 he published *Geschichte und Topographie Klein Asiens.* **II. Georg,** a German philologist, brother of the preceding, born in Lübeck, April 16, 1820. His *Griechische Schulgrammatik* (1852) has passed through many editions and translations. His other principal works are: *Erläuterungen zu meiner Griechischen Schulgrammatik* (1863); *Grundzüge der griechischen Etymologie* (1858–'62); and *Studien zur griechischen und lateinischen Grammatik* (5 vols., 1868–'72). In 1849 he became professor in Prague, in 1854 in Kiel, and in 1862 in Leipsic.

CURTIUS, Marcus, a legendary Roman hero, about the middle of the 4th century B. C. The haruspices declared that an earthquake chasm in the forum could be filled only by casting into it that on which the greatness of Rome depended. While every one was doubting as to the meaning of the declaration, Marcus presented himself, and proclaiming that Rome contained nothing more indispensable to her greatness than a valiant citizen fully accoutred for battle, he offered himself as a victim; and, having arrayed himself in complete armor and mounted his war horse, he galloped into the abyss. Then the earth closed, and the forum resumed its wonted aspect. The place of the chasm was ever after called Lacus Curtius. According to other traditions, however, the chasm owed its name to earlier events and heroes, one of them, Mettus Curtius, a Sabine of the time of Romulus.

CURTIUS RUFUS, Quintus, a Roman historian, according to some critics contemporary with Vespasian, according to others with Constantine. His history, entitled *De Rebus Gestis Alexandri Magni*, consisted originally of ten books, but the first two have perished, and the eight that remain are by no means perfect. It is written in a pleasing though inflated style, and is not a good historical authority. The best edition is that of Zumpt (Berlin, 1849).

CURVE, or **Curved Line,** in geometry, a line which continually and continuously changes its direction. In the higher geometry, a curve is a line in which the coördinates of each point fulfil the same laws. (See ANALYTICAL GEOMETRY.) The circumference of a circle is the simplest of all curves. It is taken as the measure of curvature. The circle which would exactly fit any curve at any point is called the circle of curvature or osculatory circle at that point, and its radius, the radius of curvature. A law by which this radius increases and diminishes in going to different points is usually considered the most vital law of the curve.

CURZOLA, an island of Dalmatia, Austria, in the Adriatic, S. of Lesina, and separated from the mainland by a narrow strait; pop. 11,100. The capital, Curzola, has a Catholic high school; pop. 2,300. Near Curzola the Genoese under Doria, on Sept. 8, 1298, gained a great naval victory over the Venetians under Dandolo.

CURZON, Paul Alfred de, a French painter, born near Poitiers, Sept. 7, 1820. He excels chiefly in landscape painting, has explored the Morea in company with Edmond About and Charles Garnier, and has executed many good pictures, especially those of the Acropolis of Athens and the shores of the Cephissus, which were favorably noticed at the universal exhibition in Paris in 1855. He also received a second medal in 1857, and a third at the exhibition in 1867.

CUSH, the name of the eldest son of Ham, as well as of a southern region of the Scriptural world, which is rendered Ethiopia by the Septuagint, the Vulgate, and almost all other versions of the Hebrew Bible, and *Mohrenland*, or land of the blacks, by Luther. There can be no rational doubt that Ethiopia, in its more common and limited sense, was designated by that appellation in Hebrew, though Bochart has contended for its meaning exclusively southern Arabia. Ezekiel (xxix. 10) speaks of it as lying beyond Syene, which perfectly agrees with the classical definition of the boundaries of Ethiopia. Mizraim (Egypt) and Cush are often connected by the prophets, and mentioned together in the Psalms (lxviii. 31). The Cushites appear together with other African nations in historical relations; their black complexion is alluded to in the Bible as well as in the Mishnah. But whether Cush included any other region in the world known to the Hebrews, especially southern Arabia, is a question which has elicited a great deal of ethnological controversy. Michaelis and other critics defend the affirmative; Gesenius maintains the negative. The former opinion is strengthened by a number of Scriptural passages in which Cush appears together with Arabian tribes, by its being rendered Arabia in the Chaldee paraphrase of Jonathan, and by the existence of a tribe called Beni Khusi in Yemen, according to Niebuhr. We find, besides, the land of Cush compassed by the river Gihon (Gen. ii. 13), and Cush the father of Nimrod, who founded empires in Asia. The same name is connected by Ezekiel with Elam or Susiana, which again agrees with the classical names of Cissians and Cossæans given to the inhabitants of the latter country, and with its modern name, Khusistan. The Himyarites, an ancient people of southern Arabia, are styled by Syrian writers both Cushæans and Ethiopians. The classical term Ethiopia, too, comprised many distant and distinct nations, having in common only their sun-burnt complexion. Homer calls them "a divided race, the last of men, some of them at the extreme west, and others at the extreme east." Strabo says nearly the same. Herodotus speaks of an eastern or Asiatic, and a western or African Ethiopia. The prevalent opinion of the latest ethnological and Biblical scholars is, therefore, that Cush in its limited meaning designates Ethiopia, but is also the name of several Asiatic regions situated along the shores of the southern ocean, and inhabited by people of the Hamitic family. "Recent linguistic discovery," says George Rawlinson ("Herodotus," book i., essay xi.), "tends to show that a Cushite or Ethiopian race did in the earliest times extend itself along the shores of the southern ocean from Abyssinia to India. The whole peninsula of India was peopled by a race of this character, before the influx of the Aryans; it extended from the Indus along the seacoast through the modern Beloochistan and Kerman, which was the proper country of the Asiatic Ethiopians; the cities on the northern shores of the Persian gulf are shown by the brick inscriptions found among their ruins to have belonged to this race; it was dominant in Susiana and Babylonia, until overpowered in the one country by Aryan, in the other by Semitic intrusion; it can be traced, both by dialect and tradition, throughout the whole south coast of the Arabian peninsula; and it still exists in Abyssinia." The early power and culture of the Cushite race, in the widest sense of this term, are the principal theme of J. D. Baldwin's "Prehistoric Nations" (New York, 1869).

CUSHING, Caleb, an American jurist and statesman, born in Salisbury, Essex co., Mass., Jan. 17, 1800, died at Newburyport, Jan. 2, 1879. At the age of 17 he graduated at Harvard college, and for nearly two years was tutor of mathematics and natural philosophy. He was admitted to the bar and commenced practice at Newburyport in 1825. Although he attained high professional success, he continued to give a part of his attention to literary studies, and became a prominent contributor to

the "North American Review" on historical and legal topics. In 1825 he was elected a representative from Newburyport to the lower house of the Massachusetts legislature, and in 1826 a member of the state senate. At the beginning of his public life he was a member of the then republican party. In 1829 he visited Europe on a tour of pleasure, and remained abroad nearly two years. The fruits of this tour were his "Reminiscences of Spain" (2 vols. 12mo, 1833), a collection of miscellanies which indicated a minute acquaintance with Spanish history and literature. To this succeeded in the same year his elaborate "Historical and Political Review of the late Revolution in France," and of the consequent events in other European nations (2 vols.). In 1833 Mr. Cushing was again elected a representative from Newburyport to the Massachusetts legislature, in which office he continued two years. In 1834 he was elected from the Essex north district of Massachusetts a representative to congress, and served for four consecutive terms. He supported John Quincy Adams for the presidency, and was a whig until the accession of Mr. Tyler, whose administration he supported, and became classed as a democrat. In 1843 President Tyler nominated him as secretary of the treasury, but the nomination was rejected by the senate. In the summer of that year he went to China as commissioner, and in 1844 negotiated the first treaty of the United States government with the emperor of China. On his return he was again elected to represent Newburyport in the state legislature, and during the session of 1847 became conspicuous by his advocacy of the Mexican war. A bill to appropriate funds to equip the Massachusetts regiment of volunteers having been defeated in the legislature, Mr. Cushing furnished the requisite sum from his own means. He was then appointed colonel of the regiment, and in the spring of 1847 accompanied it to Mexico. He was attached to the army of Gen. Taylor, and soon after received the appointment of brigadier general. While still in Mexico, he was nominated by the democratic party of Massachusetts as its candidate for governor, but was defeated. In 1850, for the sixth time, he represented Newburyport in the legislature of Massachusetts. In the same year he was elected as the first mayor of that city, and was re-elected the following year. In 1852 he was appointed a justice of the Massachusetts supreme court, a post which he filled till March, 1853, when he was appointed by President Pierce United States attorney general, from which office he retired March 4, 1857. In 1857, 1858, and 1859 he again served in the legislature of Massachusetts. In April, 1860, he was president of the democratic national convention at Charleston, S. C., and in the following June of the convention of seceders from that body which met in Baltimore and nominated Breckinridge for president. About the middle of December he was sent to Charleston by President Buchanan as a confidential commissioner to the secessionists of South Carolina, to make arrangements about Fort Sumter; but his mission effected nothing. During the civil war he held no official position, but gave his influence to the cause of the Union. In 1866 he was appointed one of three eminent lawyers to revise and codify the laws of the United States. In 1872 he was one of the counsel for the United States at the Geneva conference for the settlement of the Alabama claims, and in 1873 published a book entitled "The Treaty of Washington," in which he sharply criticises the character and conduct of Sir Alexander Cockburn, the British arbitrator. In December, 1873, he was appointed minister to Spain. In January, 1874, he was nominated to the office of chief justice of the United States, but the nomination was subsequently withdrawn.

CUSHING, Luther Stearns, an American lawyer, born in Lunenburg, Mass., June 22, 1803, died in Boston, June 22, 1856. He became clerk of the Massachusetts house of representatives in 1832, judge of the court of common pleas in 1844, and after four years on the bench became reporter to the supreme court. In the last capacity he published eight volumes of reports. He was a leading editor for some years of the "Jurist and Law Magazine," and published "Rules of Proceedings and Debates in Deliberative Assemblies" (12mo, 1854), which is the standard text book on the subject in congress and the state legislatures generally, "Introduction to the Study of Roman Law" (12mo, 1854), and "Law and Practice of Legislative Assemblies in the United States" (8vo, 1855).

CUSHING, Thomas, an American statesman, born in Boston, March 24, 1725, died Feb. 28, 1788. He graduated at Harvard college in 1744, and for many years represented Boston in the general court. He became speaker of that body in 1763, and his signature being affixed as speaker to all public papers, he became so prominent in the disputes with Great Britain that Dr. Johnson, in his "Taxation no Tyranny," remarked, "One object of the Americans is said to be, to adorn the brows of Mr. Cushing with a diadem." He was a member of the first and second congresses, was commissary general in 1775, judge of probate and of common pleas in 1777, and in 1779 was elected lieutenant governor of Massachusetts, a station which he retained until his death.

CUSHING, William, an American jurist, born at Scituate, Mass., March 1, 1732, died there, Sept. 13, 1810. He was the son of Judge John Cushing, one of the presiding judges at the trial of the British soldiers for the massacre at Boston, March 5, 1770. He graduated at Harvard college in 1751, studied law, was appointed attorney general of the state, and in 1768 judge of probate for Lincoln co., Maine. In 1772 he became a judge of the superior court of Massachusetts, and in 1777 succeeded his father as chief justice of that court. He was made a judge of the supreme court of the state

in 1782, and he was the first chief justice under the state constitution of 1788. In 1789 he was appointed by President Washington a justice of the supreme court of the United States, and in 1796 nominated as chief justice to succeed Jay. He was confirmed by the senate, but refused to accept the post.

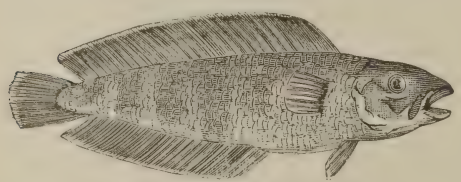
CUSHING, William B. See supplement.

CUSHMAN, Charlotte Saunders, an American actress, born in Boston, Mass., July 23, 1816, died there, Feb. 18, 1876. The bankruptcy of her father required her at the age of 12 to contribute to the family support. Possessing a fine voice and much musical taste, she had already acquired some local reputation as a vocalist, when she was engaged to sing in a concert with Mrs. Wood, who declared her voice to be the finest contralto she had ever heard, and advised her to cultivate it for the stage; and she made her début at the Tremont theatre, Boston, April 18, 1835. An engagement was then procured for her to sing in English opera at New Orleans; but scarcely had she arrived there when her voice failed under the effect of a sudden change of climate and of an unwise attempt to convert it into an available soprano. She then resolved to become an actress, and studied the part of Lady Macbeth, in which she made her appearance with complete success. She returned to New York and accepted a three years' engagement at the Bowery theatre; but after performing a week she was prostrated by fever, and during her illness the theatre, and with it her entire theatrical wardrobe, was destroyed by fire. After an interval of several months she accepted an engagement as stock actress in the Park theatre, and for three years appeared in a great variety of parts. During this period she assisted her younger sister to make her début on the stage, and afterward appeared with her for several seasons at Philadelphia and New York. To obtain prominent female characters for her, Miss Cushman was accustomed to take the chief male parts in the plays in which her sister appeared. She afterward undertook the direction of one of the Philadelphia theatres, which she retained until invited by Mr. Macready in 1844 to accompany him on a tour in the northern states, in the course of which she undertook the higher range of tragic parts with great success. In 1845 she went to England, and made her first appearance at the Princess's theatre, as Bianca in Milman's tragedy of "Fazio." Her reception was enthusiastic, and for 84 nights she appeared in a variety of characters, including Lady Macbeth, Julia in "The Hunchback," Mrs. Haller, Beatrice, Lady Teazle, Rosalind, and Juliana in "The Honeymoon." Her sister having joined her, they acted together for several years at the Haymarket theatre and in the chief provincial towns of Great Britain. In 1849 she revisited the United States, and, in addition to her ordinary characters, assumed that of Meg Merrilies, in the play of "Guy Mannering," a striking personation, which she may be said to have created. After another tour in England she returned to America, and having accumulated a fortune, took a formal leave of the American stage. She subsequently acted a round of engagements in England, and appeared again in the United States in 1857 and 1858, after which she returned to Rome, where she had previously resided. Some years afterward she settled near Boston. In 1860 and 1871 she again appeared in New York and other places, and in 1875 in Boston.—Her sister SUSAN, born in 1822, became an actress after an unfortunate early marriage with a Mr. Merriman, and attained considerable popularity in such parts as Ophelia, Juliet (which she acted to her sister's Romeo for upward of 200 nights in England), Olivia, &c. She was married in March, 1848, to Dr. James S. Muspratt, professor of chemistry in Liverpool, where she died May 10, 1859.

CUSHMAN. I. Robert, one of the founders of Plymouth colony, born in England about 1580, died in 1625. He joined the nonconformist exiles at Leyden, and in 1617 was sent to London with John Carver, as their agent to negotiate with the Virginia company for leave to settle within their dominion in North America, and to petition King James for "liberty of conscience there." Not gaining the last point, he returned to Leyden after an absence of about six months. In the latter part of the same year he, with the same colleague, was again despatched with written terms from the Leyden Congregational church, but gained no better result, for the company was now distracted by dissensions among its officers. In 1619 Mr. Cushman was sent the third time on the same embassy, associated with Elder William Brewster, and a patent was finally obtained in the name of John Wincob, which however was not used, as that person did not emigrate. In 1620 he was despatched the fourth time to London, with Carver and Martin, to receive money and provide for their embarkation. The "Merchant Adventurers" of London now began to withdraw their means and promises, and insisted upon two stringent alterations in the terms of their contract with his associate. Cushman assented to them, which gave dissatisfaction to many of his friends, though they afterward perceived that it saved the expedition and their ventures in it from utter failure. He procured the Mayflower, a pilot, &c., and sailed in her, as "assistant governor" to the passengers, from Southampton, Aug. 5, 1620, in company with the Speedwell. The latter vessel being dismissed and left at Plymouth as unseaworthy, Mr. Cushman was appointed to the care of those left ashore, and followed in the next vessel, the Fortune, 55 tons, bringing most of them and others, and reaching New Plymouth, Nov. 9, 1621. On Dec. 12 he preached in the "common house" of the little colony the first sermon in America that was printed, "On the Sin and Danger of Self-Love," a discourse

abounding in wisdom, and enriched with very many illustrations and examples from sacred history, evidently written to allay any dissatisfaction among the colonists. He sailed for England the next day, in the same vessel by which he came, which was captured by the French, plundered, and detained two weeks on their coast. After his arrival he issued an eloquent vindication of the colonial enterprise, and appeal for Christian missions to the American Indians, which was the first published argument for English emigration to this country. In 1623, with Edward Winslow, envoy from New Plymouth, he procured from King James, through Lord Sheffield, a charter for territory on Cape Ann. Early in 1625, while preparing to emigrate thither to join his son, and make New Plymouth his permanent residence, he died. **II. Thomas,** son of the preceding, born in England in 1608, died at Plymouth, Dec. 11, 1691. He came with his father to New Plymouth in the Fortune, Nov. 9, 1621, and was left in the care of Gov. Bradford, in whose family he lived till manhood. He married Mary, third child of Isaac Allerton, who died in 1699, aged 90, the last survivor of the Mayflower passengers. He is described in the Plymouth first church records as an unusually temperate, studious, and peaceable man, much beloved by his people. A massive granite monument to the memory of these Cushmans was erected at Plymouth by their descendants, and consecrated Sept. 16, 1858.

CUSK, a fish belonging to the cod family or *gadidæ*, and to the genus *brosimus* (Cuv.), characterized by an elongated body, a single dorsal fin extending the whole length of the back, fleshy ventral fins, and one barbel at the chin. The American cusk, which is considered specifically distinct from the European, is the *B. flavescens* (Lesueur). The color varies from brownish with yellowish sides to whitish with brownish patches; the immature fish is of a uniform dark slate color, sometimes with transverse yellow bands; the dorsal, caudal, and anal fins are bordered with bluish black, and edged with white; the dorsal and anal are continued to the base of the tail. The length of the fish varies from 2 to 3 ft. and more, one of the first dimensions weighing about 4 lbs. It is taken generally on the middle bank, with the hook, by the deep-



American Cusk (Brosimus flavescens).

water cod-fishers. In spring it is seen in the Boston market, when it is less esteemed than cod, but in winter it commands a higher price; as a fresh fish it is considered a delicacy, and salted is generally preferred to cod. It is found along the shore of the British provinces, and even in high latitudes. The European species, *B. vulgaris* (Cuv.), called torsk or tusk, is also a northern fish, plentiful among the Shetland islands, where it forms a considerable article of trade; it is caught, salted, and dried in the same manner as cod; it is common on the coasts of Norway, Iceland, and the Faroe islands. It resembles very much the *B. flavescens*, and the two are considered by some as varieties of one species.

CUSTARD APPLE (*anona reticulata*), a species of dicotyledonous plants belonging to the natural order *anonaceæ* or anonads, of which it is so typical as to have given to the whole family the common name of the custard-apple order or tribe. The custard apple properly so called (although the name is often given to several allied species) is a small tree, indigenous to the West Indies and South America. Like the other plants of its order, it has the calyx and



Custard Apple (Anona reticulata).

sepals of its flowers arranged in threes; the seed largely consists of the albumen, which is ruminated or perforated. The fruit is large, dark brown, and marked with depressions like those on a young pine cone, looking as though it had been "quilted." The pulp is of reddish yellow color and pleasant taste; it is soft and creamy, like custard. The cherimoyer (*A. cherimolia*) of Peru is very similar to the preceding, but superior in flavor. The sour sop of the West Indies (*A. muricata*) has a larger fruit, sometimes reaching the weight of two pounds. It is of a light green color, with a prickly skin; the pulp is white and acid. The sweet sop, the fruit of *A. squamosa*, a tree common both to the East and West Indies, is covered with thick scales, and the leaves of the tree have a disagreeable odor; but the pulp of the fruit is pleasant, though it is not so much relished by Europeans as by the natives. The *anona palustris*, a tree also indigenous to the West Indies, is valuable for the

properties of its light, soft wood, often used instead of cork for a variety of purposes.

CUSTER, George Armstrong. See supplement.

CUSTINE. I. Adam Philippe, count de, a French general, born in Metz, Feb. 4, 1740, guillotined in Paris, Aug. 29, 1793. He served with distinction in the seven years' war, and in America under Washington. In 1789 he was elected by the nobility of Lorraine as deputy to the states general. He favored the revolution, but his noble birth and associations made him a constant object of suspicion to the republicans. In June, 1792, he was appointed commander-in-chief of the French army on the lower Rhine, and took possession of Landau, Weissenburg, Spire, Worms, Mentz, and Frankfort; but he suddenly evacuated the German towns, and withdrew to Alsace. This gave umbrage to the leaders of the convention; but he succeeded in vindicating himself, and received the command of the northern army. However, he was finally accused of treason, sentenced to death on Aug. 28, 1793, and guillotined on the following day, but asserted to the last his loyalty to the principles of the revolution. A few months later, his son and aide-de-camp, Renaud Philippe, was doomed to the same fate. **II. Astolphe,** marquis de, grandson of Count Adam, born in Paris in 1793, died at his château of St. Gratien, near Pau, in September, 1857. He was the author of several novels, and of a tragedy, *Béatrix Cenci*, which failed on the stage. He travelled extensively on the continent, and in England, and published three books of travels, of which that on Russia, *La Russie en* 1839, attracted general attention, and was translated into English and German.

CUSTIS, George Washington Parke, the adopted son of George Washington, born at Mount Airy, Md., April 30, 1781, died at Arlington house, Fairfax co., Va., Oct. 10, 1857. He was the youngest child of John Parke Custis, a son of Mrs. Washington by her first husband, and an aide-de-camp to Gen. Washington at the siege of Yorktown. John Parke Custis died at Eltham, Md., of camp fever, just after the surrender of Cornwallis, leaving four children, the two youngest of whom were adopted by Washington. George Washington Parke Custis was brought up at Mount Vernon, subsequently pursued his classical studies at Princeton, and remained a member of Washington's family until the death of Mrs. Washington in 1802, when he went to reside at Arlington, an estate of 1,000 acres in the neighborhood of Washington, which he had inherited from his father. He erected Arlington house, and devoted his life to literary and agricultural pursuits. After 1852 he was the sole surviving member of Washington's family, and his residence was for years an attractive resort on account of its many interesting relics of that family. Mr. Custis was the author of a number of remarkable orations, of several plays, and of "Recollections of Washington," published at various times in the "National Intelligencer." He was fond of painting, and in the latter part of his life executed a number of pictures of revolutionary battles. He was married in early life to Miss Mary Lee Fitzhugh of Virginia, and left a daughter, who married Robert E. Lee, from whom the Arlington estate was confiscated in the civil war, being now held as national property and the site of a Union soldiers' cemetery.

CUSTOMS AND USAGES. The common law of every country is made up in great measure of customs which have come to be universally recognized and adopted, of which the courts take judicial notice, and by which they adjudicate the rights and liabilities of individuals. But besides these customs which constitute a part of the general law of the state, special customs also prevail, some of which are confined to particular localities, while others relate to particular trades, professions, or occupations. Thus, there are in England the custom of gavelkind, prevailing in Kent, under which all the sons inherit, instead of the eldest son alone; the custom of borough English in some boroughs, by which the youngest son is favored in the inheritance; and the custom of London, which among other things permits a married woman to engage in mercantile pursuits. These also are judicially noticed by the courts. The custom of merchants is often alluded to as if in a similar way it constituted an exception to the common law, but this is a mistake; it is only one branch of that law which has grown up with commerce and expanded with the changes in the modes of transacting business and the necessities of trade. But there are also other customs which the common law permits to be established, but of which the courts can have no knowledge until informed by evidence, and which consequently must be proved in any case in which they are relied upon, and be found as facts by the jury. The proof consists in showing immemorial and uniform usage in accordance with the custom relied upon; and this furnishes the definition of custom, as being a usage which by common consent and uniform practice has become the law of the place, or of the subject matter to which it relates. Blackstone gives the several requisites of a good custom as follows: 1. It must have been used so long that the memory of man runneth not to the contrary. If this were strictly correct, it would preclude the establishment of any new customs; but in fact these are constantly being established and supported, and now when an immemorial usage is spoken of, all that is meant is a usage which has prevailed for a sufficient time to raise a reasonable presumption that parties in their dealings have adopted it as a rule of action. 2. It must have been continuous. 3. It must have been peaceable and acquiesced in, and not subject to contention and dispute. 4. It must be reasonable. 5. It must be certain. 6. It must be compulsory, and not left to the option of every man whether he will use it or no. 7. Cus-

toms must be consistent with each other; one custom cannot be set up in opposition to another, which would be contradictory and absurd. To these it may be added that custom cannot set aside or vary the statute law, or be opposed to the constitution of the land, or repugnant to the general principles of the common law. Neither can it be allowed to overcome or vary express contracts. It may explain contracts by establishing the sense in which the words employed in them are understood in the business, and which may be different from the ordinary sense; but it is only enforced in any case upon the presumption that the parties have adopted it in their dealings, which can never arise when they have agreed to the contrary. The reasonableness of a custom is a question of law for the court; and "it will not be enforced or have the sanction of law, unless it be reasonable and convenient, and adapted not only to increase facilities in trade, but to promote just dealings." (9 Metcalf's Reports, 363.) And any custom opposed to the general law of the state on the subject to which it refers must always be held unreasonable.—The local customs of France were more numerous and diverse during the middle ages than those of England, owing to the greater independence of the French nobles, which left each province more at liberty to originate usages for itself. Not less than 60 are enumerated as having been reduced to a certainty during the 16th century, besides more than 200 others inconsiderable for extent or peculiarity. These gradually assimilated, and in large degree became absorbed in the body of general law. The *coutume de Paris*, as the common law of the French colonists in America, prevailed more or less in the states formed from the Louisiana purchase, after French dominion ceased, until expressly abrogated by statute.

CUSTOZZA, or **Custoza,** a village of Italy, in the province and 10 m. S. W. of the city of Verona, near Villafranca, which on July 25, 1848, was the scene of a battle between the Austrians under Radetzky and the Sardinians under Charles Albert in person; and on June 24, 1866, of an equally important battle between the Austrians under Archduke Albrecht and two Italian army corps under Lamarmora. The Italians were defeated in both engagements, and in the latter the second son of the king of Italy, Amadeo, was wounded.

CÜSTRIN. See KÜSTRIN.

CUTCH, a native state of Hindostan, under the superintendence of the Bombay government, bounded N. W. and N. by Sinde, E. by the Guicowar's dominions, S. by the peninsula of Cattywar and the gulf of Cutch, and S. W. by the Arabian sea. It lies between lat. 22° 47′ and 24° 40′ N., and lon. 68° 26′ and 71° 45′ E.; greatest length from E. to W. 205 m., breadth 110 m.; area, exclusive of the great salt marsh called the Runn of Cutch, which covers the N. part of the territory, and communicates with the gulf, 6,764 sq. m.; pop. about 500,000. The Runn is 160 m. long from E. to W., from 4 to 80 m. wide, and about 7,000 sq. m. in area, including several islands. During the rainy season it is impassable except in a very few places, and the S. part of the country becomes a vast island; but as the waters subside tolerable pastures appear here and there, and barren sand banks, covered with saline incrustations, are left exposed. The rest of the surface is hilly, two low mountain ranges traversing it E. and W., and exhibits traces of volcanic action. Earthquakes are occasionally felt, and in 1819 a severe shock destroyed several hundred lives, and raised a mound of sand and earth several miles in extent, while a corresponding depression took place in the neighborhood. With the exception of a few fertile tracts, the country is sterile and almost destitute of perennial rivers. The agricultural staple is cotton, besides which there are plantations of sugar and of the common grains of India. Timber is scarce, but there are valuable minerals, including coal, iron, and alum. Cutch produces excellent horses, a poor breed of oxen, and numerous sheep and goats. Wild asses are met with in large herds near the Runn. The principal towns are Bhooj, the modern capital, and Anjar. The dominant race is a Rajpoot tribe, under a ruler bearing the title of rao or row, and about 200 chiefs of the same family, each independent in his own district, and who compose a general council.

CUTCH, Gulf of, an arm of the Arabian sea, running E. N. E. between Cutch and the peninsula of Cattywar (Guzerat), 110 m. long, and 25 m. wide at the entrance. It has often been described as very dangerous to navigation, but though full of eddies it is tolerably free from rocks, and there seems to be no reason for regarding it as peculiarly perilous.

CUTCH GUNDAVA, a N. E. province of Beloochistan, bordering on Sinde and Afghanistan, and bounded W. by the Hala mountains, in which is the famous Bolan pass. It lies between lat. 27° 40′ and 29° 50′ N., and lon. 67° 20′ and 69° 20′ E.; length from N. to S. about 150 m., breadth 130 m.; area, about 10,000 sq. m.; pop. about 100,000. It consists mainly of a vast arid plain, little cultivated, but in some parts thickly peopled. The S. E. part is occupied by the desert of Shikarpoor, 40 m. in extent, the soil of which is hardened clay, almost destitute of vegetation. The climate is sultry, water is scarce, and the chief productions are bajra and Indian millet. There are some fertile tracts devoted to the cultivation of cotton, sugar, madder, and fruits. Capital, Gundava.

CUTHBERT, a saint and bishop of the English church, born probably in the first quarter of the 7th century, died March 20, 687, which day is observed as his festival. He was early attracted to the monastic life by the virtues of St. Aidan and his brethren, and was con-

strained by a timely vision to join the fraternity. In 664 he was chosen prior of Melrose, and some years later was transferred to the charge of the monastery of Lindisfarne, or the "Holy island," a few miles S. of Berwick. His fondness for austerity of life was not satisfied by the comparative ease of this large establishment, and after a few years he retired to the isle of Farne. It was barren, without wood or water; but the industry of the hermit opened springs and covered the ground with fields of grain. The fame of his holiness brought many visitors, among them Elfleda, daughter of the Northumbrian king Oswy, with whom he usually conversed through a window. For more effectual isolation he dug a trench around his cabin. But in 684, yielding to the prayers of King Egfrid and the Northumbrians, he accepted the bishopric of Hexham, which he soon exchanged for that of Lindisfarne, and at the end of two years resigned his episcopal office, and retired to end his life in his hut in the isle of Farne. When the Danes came, the monks of Lindisfarne bore his relics with them in their flight from place to place, until they found a final resting place for them on the banks of the Wear; and around his shrine, a convent, cathedral, and city arose, called Dunholme (Durham). The legends and relics of St. Cuthbert remained for ages the chief treasure of Durham cathedral. He received the name of the "Thaumaturgus of Britain." No intercession was deemed so powerful by the peasantry of the north of England, and pilgrimages were made to his shrine. His body, which according to Bede had been found incorrupt 11 years after its burial, continued for ages to enjoy that miraculous fame. His coffin was opened in 1827, and the skeleton found enveloped in five silken robes. The Roman Catholic church celebrates on Sept. 4 the festival of the translation of St. Cuthbert's relics from Lindisfarne to Durham; in some parts of Northumberland the day is still observed.—St. Cuthbert of Durham is to be distinguished from Cuthbert the Benedictine monk, who was a pupil of Bede, attended him in his last hours, and wrote a memoir of his life. Another Cuthbert was archbishop of Canterbury for 18 years from 740 to 758.

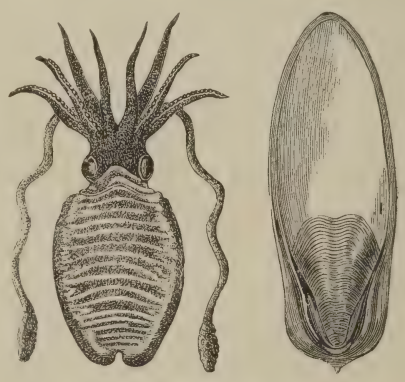
CUTLER. I. Manasseh, an American clergyman, born at Killingly, Conn., May 3, 1742, died at Hamilton, Mass., July 28, 1823. He graduated at Yale college in 1765, engaged in the whaling business, and opened a store at Edgartown, on Martha's Vineyard. While thus employed he studied law, and was admitted to the bar of Massachusetts in 1767. But this profession was not congenial, and he determined to study theology. He removed to Dedham, was licensed in 1770, and preached six months as a candidate at the Hamlet parish, then a part of Ipswich, but which was incorporated as the town of Hamilton in 1793. Over this parish he was ordained, Sept. 11, 1771. On the breaking out of the revolution he espoused the cause of the colonies with great vigor, and in September, 1776, received a commission as chaplain. Toward the close of the revolution, as the physician of the Hamlet parish was employed in the army, Mr. Cutler studied medicine, and for several years administered to the bodily as well as spiritual maladies of his flock, for the former services receiving little or no compensation; yet notwithstanding these arduous labors, he soon became noted for his scientific tastes and attainments. In 1781 he was elected a member of the American academy, and in the volume of memoirs published by that society in 1785 are papers from his pen bearing the following titles: "On the Transit of Mercury over the Sun, Nov. 12, 1782;" "On the Eclipse of the Moon, March 29, 1782, and of the Sun in the following April;" "Meteorological Observations, 1781, '82, '83;" "An Account of some of the Vegetable Productions naturally growing in this part of America;" and in the third volume of the memoirs appeared "Remarks on a Vegetable and Animal Insect." His botanical paper was the first attempt at a scientific description of the plants of New England. He examined and described according to the Linnæan system 350 species of plants found in his neighborhood. In 1784 he with six others ascended the White mountains; this party are said to have been the first white men who ever reached the summit. With Dr. Peck's assistance he prepared the chapter on trees and plants in Belknap's "History of New Hampshire." In 1786 he became a member of the Ohio company, founded by officers of the army for the purpose of having their bounty lands located together; and he and Major Winthrop Sergeant visited the seat of government, and made a contract for 1,000,000 acres of land N. W. of the Ohio river, obtaining also a grant of 500,000 acres more, as an allowance for bad lands and incidental charges. By order of the directors Cutler on his return immediately prepared to fit out an expedition. He had a large wagon built and covered with black canvas, on which were painted in white letters the words "Ohio, for Marietta on the Muskingum." The circumstances under which it left New England and reached that then uncultivated wilderness have placed this exploring wagon historically by the side of the Mayflower. Forty-five men were engaged to accompany it, and to help to settle and defend the new country for three years. They started from Cutler's house in December, 1787; and their number having been increased to 60, they commenced the settlement of Marietta, April 7, 1788, under Gen. Rufus Putnam. Cutler started in a sulky for Ohio, which he reached in 29 days by a route of 750 miles. He examined the fortifications and mounds in the neighborhood, which he considered were the work of a nation more civilized and powerful than any existing tribe of Indians. After remaining a short time at Marietta, he returned to New England. In 1795 Washington tendered

him a commission as judge of the supreme court of the Ohio territory, which he declined. He was afterward elected representative to the state legislature of Massachusetts, and from 1800 to 1804 he served as a representative in congress. He declined a reëlection in 1804, and continued till his death to be pastor of the church at Hamilton. **II. Jervis,** son of the preceding, born at Hamilton, Mass., in 1769, died at Evansville, Ind., June 25, 1844. In 1788, at the age of 19, he joined the little company who settled at Marietta, Ohio. He cut down the first tree for an emigrant's clearing in that state, and was the last survivor of that pioneer company.

CUTLER, Timothy, D. D., president of Yale college, born at Charlestown, Mass., in 1684, died in Boston, Mass., Aug. 17, 1765. He graduated at Harvard college in 1701, and after a ministry of ten years at Stratford, Conn., was chosen president of Yale college in 1719. In 1722 he renounced his connection with the Congregational churches, whereupon the trustees passed a vote "excusing him from further services as rector of Yale college," and requiring in future from their rectors evidence of the "soundness of their faith in opposition to Arminian and prelatical corruptions." He then went to England and took orders; and in July, 1723, he became rector of Christ church, Boston, where he remained till his death. A series of his letters in Nichols's "Illustrations of Literary History" have considerable historical value.

CUTTACK. I. A division of the province of Bengal, India, bounded E. and S. E. by the bay of Bengal, and lying between lat. 19° 30′ and 21° 40′ N., and lon. 85° 8′ and 87° 31′ E.; area, 6,705 sq. m.; pop. about 1,500,000. It is divided into the districts of Pooree, Cuttack proper, and Balasore. The district of Cuttack has an area of 3,061 sq. m. It is well watered, the coast is level, and the N. W. part is traversed by hills which produce teak and other valuable timber. Wheat, maize, rice, sugar, pulse, spices, and dyestuffs are the principal productions. The best salt in India is made on the coast, and iron is found among the hills. The climate is hot and unhealthy. The province was acquired by the British from the rajah of Berar in 1803. In 1817 it was the theatre of a serious revolt, and in the mutiny of 1857 it was somewhat disturbed. The Cuttack Mehals, a group of 18 petty states, with an aggregate area of 16,929 sq. m., and a population of 761,805, became subject to the East India company on the acquisition of the province. They comprise a small proportion of arable land, but are valuable for their timber. **II.** A city, capital of the district, on a tongue of land between two branches of the Mahanuddy river, 60 m. from its mouth and 220 m. S. W. of Calcutta; pop. estimated at 40,000. Embankments faced with stone protect it from the frequent overflows of the river, which has been known to rise six feet above the level of the town in a single night. It is half in ruins, has little trade, and contains no handsome buildings. Many of the dwellings, however, are well built of brick or stone, and it has manufactories of brass cooking utensils and shoes. Near it is the decayed fortress of Barahbattee, now used as a quarry. The town was the capital of the ancient province of Orissa, and its name, from the Sanskrit *catak*, signifies a royal residence. It was captured by the British in 1803.

CUTTLE FISH (*sepia officinalis*), a molluscous animal or shellfish, of the family *sepiadæ* and class *cephalopoda*. The shell, which characterizes the family, is a broad laminated plate imbedded in the back part of the mantle, and terminating behind in an imperfectly chambered apex (*mucro*), which is supposed to answer as a sort of fender in the collisions the animals are exposed to in swimming backward. This shell is a friable calcareous substance known as cuttle bone or pounce, and used for polishing soft metals. The bone of a Chinese cuttle fish has been found 1½ ft. long. As a fossil the



Sepia officinalis and Shell.

bone has been met with in the eocene clays of the London basin, and of forms indicating extinct species. The cuttle fishes are provided with eight arms and two long tentacles, all of which radiate from around the head. The tentacles are provided with suckers, and reach beyond the arms to seize prey, and serve also to moor the animal. The suckers hold so fast to objects that the limb will part from the body before they let go. By means of their arms they walk on the bottom with their heads downward; the same organs aid them in swimming, and a propelling force is moreover obtained by violently ejecting water from their branchial chamber. As a means of defence they are provided with an ink bag, the discharge of which opens into the funnel by which the water is ejected from the two gills; when attacked the animal instantly darkens the water with the black fluid from this bag, and retreats in the obscurity it occasions. Several species of *sepia* produce this inky substance. It was well known to the ancients, and is described

by Aristotle. (See Sepia.) Cuttle fishes are found in the open sea in nearly all parts of the world; and they appear near the coasts periodically in shoals. They have large eyes on the sides of the head, which seem designed for use in the night or in the darkness of deep waters, as the animal avoids the light of the day. The cuttle fish attains a length of about 3 ft.

CUTTY STOOL, the stool of repentance, formerly employed in the Scottish kirk for offenders against the law of chastity. The criminal, having been deprived of church ordinances, and duly taken to task privately for his or her offence, was required to make a public acknowledgment of the sin prior to being restored to communion. The penance consisted in occupying the stool in face of the congregation, and being lectured by the minister. Sometimes the offender was clad in a white sheet, the stool being black, and placed conspicuously in an upper gallery. The custom has fallen into disuse.

CUT-WORM, the caterpillar of an owlet moth of the tribe of *noctuæ* and group *agrotididæ*. The name has also been given to many other



Cut-worm and Moth.

grubs and worms living in the ground. This caterpillar remains by day about the roots of plants, and comes forth at night to cut off the tender stems and leaves of cabbages, beans, corn, and many other culinary plants. Some of the moths of this family fly by day, others only at night; the wings are nearly horizontal when closed; the thorax smooth and slightly convex; the antennæ of the males generally with two rows of fine tooth-like points on the under side; the fore legs are often spiny. Most of these moths appear in July and August, laying their eggs in the ground; in Europe the caterpillars are hatched in early autumn, and feed on the tender roots of plants; descending deeper in winter, they remain torpid until spring. The caterpillars of the agrotidians are smooth, shining, naked, dark-colored, with longitudinal pale and dark stripes, and a few black dots on each ring; cylindrical, short, and thick, with 16 legs; the chrysalis is transformed in the ground, without a cocoon. The most destructive European species are the winter dart moth (*agrotis segetum*), and the wheat dart moth (*A. tritici*), both destroying the roots and leaves of winter wheat and buckwheat; the eagle moth (*A. aquilina*), an occasional pest in vineyards; and the antler moth (*charæas graminis*), very destructive in meadows and mountain pastures. The American species have the same habits, appearing about the same time, destroying whole fields of corn, potatoes, cabbages, beans, and other vegetables, and also ornamental plants. The caterpillars vary in length from one to two inches, and are thick, of a dark ashy gray color, with a brown head, and a pale dorsal stripe, with minute black dots; the chrysalis is of a shining dark brown, and the moth appears from the 20th of July to the middle of August. There are at least five species in New England. The largest is the *A. telifera* (Harris), having the fore wings light brown, divided by two transverse bands of wavy dark brown lines, and with three spots (one lance-marked) encircled with dark brown; the hind wings are pearly white, the abdomen gray; expanse of wings at least two inches. The *A. devastator* (Harris), the moth of the cabbage cut-worm, has the fore wings dark satiny ashy gray, with four narrow, wavy, whitish bands edged with black, and white dots and dark spots; the hind wings are a light brownish gray, dusky behind; body gray; expanse of wings $1\frac{1}{4}$ to $1\frac{3}{4}$ inch. They fly only at night; the last is not easily taken, from its rapid motions, and often flies into lamps and candles after the middle of July. Other species are described by Dr. Harris.—The ravages of the true cut-worms are not prevented by any treatment of the seed, as they feed only on the young sprouts and stalks; the only effectual preventive is to open the earth daily at the foot of the growing plants and kill the worms, which are easily found. It is said that a manure of sea mud will protect a garden from these worms; some cultivators protect their cabbage plants by wrapping a walnut leaf or paper cone firmly around the root, secured by an earth embankment.

CUVIER. I. Georges Chrétien Léopold Frédéric Dagobert, a French naturalist, born at Montbéliard (then belonging to the duke of Würtemberg), Aug. 23, 1769, died in Paris, May 13, 1832. The family came originally from a village in the Jura which still bears the name of Cuvier; at the time of the reformation it settled at Montbéliard, where some of its members held offices of distinction. The grandfather of Cuvier had two sons, the younger of whom entered a Swiss regiment in the service of France; a brave man and excellent officer, he rose to high honors, and at the age of 50 married a lady considerably younger than himself, and had three sons; the oldest died in infancy, the second was the subject of the present sketch, and the third was Frédéric Cuvier. As Georges had a delicate constitution, his mother watched over him with the tenderest care; she taught him to read, made him repeat to her his Latin lessons, instructed him in drawing, and developed that ardent desire for knowledge which was so remarkable in him. At the age of 10 he entered the gymnasium, where he remained four years,

distinguishing himself in every branch there taught. At this early period his taste for natural history was stimulated by reading a copy of Buffon which he found at the house of a relative; and his memory was so retentive that at the age of 12 he was perfectly familiar with the descriptions of birds and quadrupeds. At 14 he formed a kind of academy from among his schoolmates, of which he was president, at whose weekly meetings the merits of some book were discussed; here his oratorical and administrative powers began to manifest themselves. A petty trick of a malicious teacher prevented his being sent to the free school of Tübingen, where he would have prepared himself for the church; and this change in his studies he always regarded as most fortunate. Charles, duke of Würtemberg, took him under his special favor, and sent him to the academy of Stuttgart in March, 1784. After studying philosophy one year, he applied himself to the science of fiscal administration, because it gave him an opportunity to pursue his favorite natural history in books, in the fields, and in cabinets. One of the professors gave him a copy of the "System of Nature" by Linnæus, which was his library on natural history for several years. While occupied by such reading and the collection of specimens, he also obtained several prizes in his class studies. On leaving Stuttgart he became private tutor in the family of Count d'Héricy in Normandy (July, 1788), where he remained till 1794. Here he pursued natural history with great zeal, being very favorably situated for the study of both terrestrial and marine animals. Some *terebratulæ* having been dug up in his vicinity, he conceived the idea of comparing fossils with living species. The dissection of some mollusks suggested to him the necessity of a reform in the classifications of animals; and here originated the germs of his two great works, the *Ossemens fossiles*, and the *Règne animal*. Through his acquaintance with M. Tessier he began a correspondence with Geoffroy St. Hilaire, Lacépède, and other Parisian savants on subjects of natural history; and in the spring of 1795 he accepted their invitation to go to Paris, and was appointed professor in the central school of the Pantheon, for which he is said to have composed his *Tableau élémentaire de l'histoire naturelle des animaux*, in which he first published his ideas on zoological arrangement. M. Mertrud had been appointed professor of comparative anatomy at the *jardin des plantes;* feeling himself unable from age to discharge all its duties, he called upon Cuvier to assist him, who at this time invited his brother Frédéric to join him, and commenced the collection of comparative anatomy which has since become so famous and extensive. In 1796 the national institute was formed, and Cuvier was associated with Lacépède and Daubenton in the section of zoology, and was its third secretary. The death of Daubenton at the close of 1799 made vacant for Cuvier the chair of natural history at the collége de France; and in 1802 he succeeded Mertrud as professor of comparative anatomy at the *jardin des plantes*. In 1800 M. Duméril, one of Cuvier's pupils, published vols. i. and ii. of his lectures, under the title *Leçons d'anatomie comparée;* the third, fourth, and fifth of the first edition, prepared by G. L. Duvernoy, appeared in 1805. In 1802, appointed by Bonaparte one of the inspectors general to establish *lycées* or public schools, he founded those of Marseilles, Nice, and Bordeaux. He quitted this office in 1803 on being elected perpetual secretary to the class of natural sciences in the institute, a position which he held until his death; in this capacity he made in 1808 his celebrated report on the progress of the natural sciences since 1789, which appeared in 1810. In 1808 he was also made one of the councillors for life to the imperial university, by which he was frequently brought into close communication with Napoleon. In 1809–'10 he was charged with the organization of the new academies in the Italian states annexed to the empire. In 1811 he was sent on a similar mission to Holland and the Hanseatic towns, and was made chevalier of the legion of honor. In 1813, though a Protestant, he was sent to Rome to organize a university there, and was also appointed master of requests in the council of state. In 1814 he was named councillor of state by Napoleon, which honor was continued to him by Louis XVIII., as also that of royal commissary, which enabled him to introduce many improvements in criminal and civil law; and he was made chancellor to the university, which office he retained during life. In 1818 he visited England with his family, to observe its political and scientific institutions; while there he was elected a member of the French academy. In 1819 he was made grand master of the university, and president of the *comité de l'intérieur*, and Louis XVIII. created him baron. In 1822 he was appointed grand master of the faculties of Protestant theology, which gave him the superintendence of the religious, civil, and political rights of his creed; and in 1827 was added to this the management of the religious affairs of all the creeds in France except the Roman Catholic. In 1824 he acted as one of the presidents of the council of state at the coronation of Charles X., who in 1826 made him grand officer of the legion of honor. In 1827 he was offered the appointment of censor of the press, which he refused. In 1830 he recommenced his lectures at the collége de France on the "History and Progress of Science in all Ages," which were continued until his death; in this year he made a second visit to England, where he happened to be when the revolution occurred which placed Louis Philippe on the throne of France. He continued to enjoy all his honors and important offices under the citizen king; and in 1832 he was created peer of France, and the

appointment of president to the entire council of state only wanted the king's signature when Cuvier expired.—Cuvier lost his mother in 1793, and his father in 1795. In 1803 he married Mme. Duvaucel, a widow with three sons and a daughter, the latter of whom devoted herself to him in his last illness; by this marriage he had four children, of whom three died early; his only remaining child, Clémentine, died in 1828, at the age of 22, on the eve of marriage; his wife and two of her first children survived him. On May 8, 1832, he opened his course of lectures at the collége de France. After the first lecture he felt slight pain and numbness in the right arm, and his throat became affected; on the third day both arms were seized, and the power of swallowing was lost, all his mental faculties and the power of speech remaining unaffected; he was perfectly calm and resigned. Four hours before he died he was carried at his own request into the cabinet where the happiest and proudest hours of his life had been spent, and where he wished to draw his last breath. Feeble in his youth, by the time he arrived in Paris his health was seriously deranged; but the excitement of new studies, the change in his habits, and the exertion of lecturing, worked such an alteration that he enjoyed good health until his final illness. He was below the middle stature, with very fair skin and reddish hair up to the age of 30; as his health improved, his hair became darker; at 45 he grew stout, but was always well; at 60 he scarcely seemed more than 50; according to Duvernoy, he never used spectacles when reading or writing. Cuvier's brain was remarkably large, weighing between 59 and 60 oz., nearly a pound more than the average; the excess was caused almost entirely by the great development of the cerebral hemispheres, the seat of the intellectual faculties.—A history of Cuvier's labors in the domain of natural history would be the history of natural science in the first half of the 19th century. Linnæus in 1735 published his *Systema Naturæ*, a mere sketch of the animal kingdom, but still a simple and valuable classification. When Cuvier formed a system based on the invariable characters of anatomical structure instead of external resemblances, he discovered the true basis of a natural classification. He first introduced the division, founded on different plans of structure, of *radiata*, *mollusca*, *articulata*, and *vertebrata;* and this has been the basis of all modern improvements in zoology. The grand idea of Cuvier was to discover the plan of created beings by the study and comparison of the intimate structure of their organism. With him comparative anatomy and zoölogy went hand in hand; and from their united facts he deduced the laws of a new science, that of fossil animal life, astonishing the world with the magnitude of his conceptions and the grandeur of his discoveries. Linnæus had included in his class of worms all animals which have not red blood, more than half of the animal kingdom. Cuvier's first researches were on this class of animals, which in 1795 he divided into the classes of his invertebrate series. His very first observations in 1792 were on the anatomy of the common patella, certain dipterous insects, and crustaceans, in the second volume of the *Journal d'histoire naturelle.* Since the time of Aristotle, the invertebrata had always been neglected until Cuvier published his divisions in 1795, from which may be dated the reformation of natural history. In the same year he studied the structure of the mollusca, divided them into orders, and commenced a series of observations which resulted in his memoir on the history and anatomy of mollusks, published in 1817. Comparative anatomy was the basis of Cuvier's zoölogy, and we find memoirs on this subject from 1795 to 1831; the *Leçons d'anatomie comparée* was but the preface to a more extended work, whose plan he had nearly completed when death overtook him; such as it is, a monument of vast labor, it has furnished materials for the development of this science, and has from its own stores enabled critics to point out unavoidable deficiencies; from a heap of dry, unconnected facts concerning the structure of animals, he obtained the general laws of organization, the limit of variation in each organ, the marked influence of some upon the general system, the subordination of many, and the coexistence or incompatibility of others. Among the prominent points are: the development of the teeth; the structure of the larynx of birds, of the nasal fossæ and organs of hearing in cetaceans, and of the respiratory organs in the perennibranchiate amphibia; the comparison of the brain in the vertebrata, and the relation of its development to the intelligence; the respiration, animal heat, muscular force, sensory and digestive systems of these animals. For this treatise he received one of the decennial prizes instituted by Napoleon in 1810. Cuvier in his scientific labors stated positively only that which he knew from personal observation, and therefore early directed his attention to collecting objects of natural history; the great collection at the *jardin des plantes*, made chiefly through his own exertions, contributed the materials of which he made such remarkable use; this collection was also necessary for the determination of fossil species, which he began to investigate while residing in Normandy. In 1796 appeared his memoir on the skeletons of the *megalonyx* and *megatherium*, and on the skulls of fossil bears from the caverns of Gaylenreuth; from this period till 1812 he contributed many papers on fossil bones, the most important of which were printed in the *Annales du muséum d'histoire naturelle*, and afterward published under the title of *Recherches sur les ossemens fossiles* (4 vols. 4to, 1812; 2d ed., 1817; 3d ed., 1825, with a preliminary discourse on the "Revolutions of the Surface of the Globe"). Deposits of mollusks and other marine animals had long been known to exist at

great distances from and heights above the sea, and were attributed to the deluge; large bones discovered in caverns or dug from the earth had given rise to traditions of the existence of giants in the early ages; even philosophers regarded the fossil impressions in the rocks and the shells in the ground as accidental freaks of nature. Bernard Palissy, an unlettered potter, discovered the animal origin and former existence of these objects; though he defied the learned men of the 16th century to disprove his statements, it was not until the end of the 17th that his ideas met with a scientific appreciation. Founded on these now acknowledged facts, many theories, all more or less fanciful, were successively adopted and abandoned until the middle of the 18th century, when more rational views began to prevail, and the study of fossils to excite that attention which, in the hands of Cuvier, resulted in establishing many of the positive laws of geology and palæontology. The bones of the giant Teutobochus had been long since recognized as those of elephants; the skeleton of the supposed antediluvian became under the eye of Cuvier that of a gigantic aquatic salamander. The fact of ancient creations of animals, entirely distinct from the present species, and long since exterminated, was established by the comparison of living and fossil animals by Cuvier. In his first memoir on fossil elephants in 1800 he announced his views on extinct animals, the commencement of a series of observations unparalleled in the annals of science for brilliancy, profound insight into natural laws, and importance of their results. With him a bone, or even a portion of one, was sufficient for the restoration of a fossil animal which he had never seen, simply from the principle of the unchangeable relations of organs. He made several epochs of creation: the first comprised the mollusks, fishes, and monstrous reptiles; the second, the *anaplotherium* and *palæotherium*, the singular pachyderms of the neighborhood of Paris; the third, the mammoth, mastodon, gigantic sloths, &c.; then came a fourth, the age of man, and the present creation. Anterior to the first epoch was a period in which no organic life, either animal or vegetable, existed on the earth. To Cuvier was principally due the discovery and exploration of this *terra incognita* of remote ages. In 1817 was published the first edition of the *Règne animal* (4 vols.), which has served as the basis for subsequent zoölogical classifications. The last great work of Cuvier, which he undertook in conjunction with Valenciennes, is the *Histoire naturelle des poissons;* this contains the application of his principles of classification to the class of fishes; eight volumes were published at the time of his death, the first having appeared in 1828, and the eighth in 1831; Valenciennes was intrusted with the task of completing it in 20 volumes, but several more than this number have been published. Linnæus had determined about 500 species, and Lacépède 1,500; the title of Cuvier's work implies the magnitude and successful prosecution of his own labors, viz.: "Natural History of Fishes, containing more than 5,000 Species of these Animals, described after Nature, and distributed according to their Affinities, with Observations on their Anatomy, and Critical Researches on their Nomenclature, ancient as well as modern."—Besides the "Report on the Progress of the Physical Sciences," undertaken at the request of Napoleon, Cuvier displayed the extent of his acquirements by his reports before the institute on meteorology and natural philosophy in general, chemistry and physics, mineralogy and geology, botany, anatomy, and physiology, zoölogy, travels connected with natural science, medicine and surgery, the veterinary art, and agriculture. He contributed many articles on natural history to the *Dictionnaire des sciences naturelles;* prominent among these is the one on "Nature," in which he combats the metaphysical systems of pantheism and the physio-philosophers, and refers everything to the wisdom and goodness of an almighty Creator. He wrote many articles for a kindred work, the *Dictionnaire des sciences médicales*, the most important of which is that on "Animal." As secretary of the academy of sciences, it was his duty to read historical notices of deceased members at its public meetings; three volumes of these sketches have been published, containing 39 articles. Besides these, he delivered several discourses at funerals of academicians. He was quite as eminent a legislator as naturalist, though less known as such; and, as royal commissary, councillor of the university, member of the state council, and president of the committee of the interior, he introduced beneficial changes in the municipal and provincial laws, and in public instruction. His language, both written and spoken, was clear, forcible, precise, and animated, frequently rising to the highest eloquence. The benignity and noble expression of his countenance was remarkable. In private, he was kind, affable, and ready to communicate information. He had the greatest love for order and regularity; he rarely allowed himself to be disturbed during the hours set aside for study, but during his hours of audience he was accessible to everybody. With his other accomplishments, he was an expert draughtsman; many of his plates were drawn by himself, and he left a large collection of designs intended to illustrate his unfinished work on comparative anatomy. The disinterestedness of Cuvier's character is shown not only by the acts of his life, but by the small fortune he left at his death; having filled offices of the highest trust, which he might have turned to his pecuniary advantage, he left only about $20,000 and a library which cost him a similar sum; this was purchased by government, and given to various institutions, principally to the *jardin des plantes*. When we consider the number of offices he held, and whose duties he conscientiously performed,

any one of which after his death was sufficient for a man of great talent, and some of which could not be as competently filled, we are able to form some idea of the varied acquirements, the unceasing industry, the wonderful memory, and the transcendent ability of Cuvier. By universal consent he is regarded as one of the best of men, most brilliant of writers, soundest of thinkers, most far-sighted of philosophers, purest of statesmen, and the greatest naturalist of modern times. **II. Frédéric,** brother of the preceding, born at Montbéliard, June 28, 1773, died in Strasburg, July 24, 1838. With a strong love for the science of mechanics, he abandoned his college studies, and became the apprentice of a clockmaker; and he would doubtless have been an eminent mechanician, had not his invitation to Paris in 1797 by his brother opened his eyes to a new world of natural science. He was employed in preparing the descriptive catalogue of the skeletons in the collection of comparative anatomy at the *jardin des plantes;* this was the beginning of his work on the teeth of mammals, published in 1825, which led to many important changes in the natural arrangement of this class, especially in the subdivision into genera, most of which are now adopted in zoology. In 1804 he assumed the direction of the menagerie at the *jardin des plantes*, which enabled him to study the habits, instincts, and intelligence of animals; the results are given in his *Histoire naturelles des mammifères* (1818–'37). Geoffroy St. Hilaire was associated with him in this work, of which 70 *livraisons* in folio appeared, describing in a simple, charming, and elegant style more than 500 animals under his charge, with anecdotes illustrating their habits and intelligence. Many of the separate papers were first printed in the *Annales du muséum d'histoire naturelle.* While Descartes and Buffon denied all intelligence to animals, and Condillac and George Leroy, on the contrary, accorded to animals even the highest intellectual operations, confounding instinct with intelligence, Frédéric Cuvier drew the line between the intelligence of different orders, tracing it from the lowest rodents through ruminants, pachyderms, and carnivora, to the quadrumana. He first showed that domesticity in animals depends on their sociability, being not a change but a development of their natural condition. Man found animals living in society, and he made such domestic; we may tame the solitary and fierce bear, lion, and tiger, but we cannot domesticate them. F. Cuvier was nominated in 1810 inspector of the academy of Paris, and in 1831 inspector general of the university. He advocated the introduction of the study of natural history into schools and colleges by graded text books shorn of technicalities. In 1827 he was elected professor of comparative physiology at the *jardin des plantes*, a chair created for him by the minister of public instruction. While on a tour for the annual inspection of the colleges, and about to deliver a course of lectures on natural history, he was seized with paralysis at Strasburg, of which he died. His last words were: "Let my son place upon my tomb this inscription, 'Frédéric Cuvier, brother of Georges Cuvier.'" Besides the two great works above mentioned, and many memoirs in the *Annales du muséum d'histoire naturelle*, Frédéric Cuvier wrote numerous articles in the *Dictionnaire des sciences naturelles*, and *L'histoire des cétacés*, in the *Suites à Buffon* (1836). His name was Georges Frédéric, but the first name was not applied to him, but always given to his brother.

CUXHAVEN, a town of Germany, in the state and 58 m. W. of the city of Hamburg, situated on the mouth of the Elbe, on its left bank; pop. about 1,700. It contains sea baths, founded in 1815, a fine lighthouse, a well regulated pilot establishment, which has superseded the use of the Heligoland fishermen for the piloting of vessels into the Elbe, and a quarantine station. The inhabitants are mostly fishermen and pilots. There are regular lines of packets to London, Havre, and Rotterdam. In 1849 and 1850, during the first Schleswig-Holstein war, a portion of the German navy was stationed here.

CUYABA, or **Cuiaba. I.** A town of Brazil, capital of the province of Matto Grosso, on the left bank of the Cuyaba river, lat. 15° 26′ S., lon. 56° W., 980 m. N. W. of Rio de Janeiro; pop. about 10,000. The streets are paved, but are very irregular, and the houses are poorly built. It contains several churches, a hospital, a lazaretto, a Latin school, a school of philosophy, and other educational institutions, and the public buildings of the province. It is the centre of a rich gold and diamond district, but the mines are now mostly abandoned on account of the cost of working them, the stones and the precious metal being no longer found on the surface. Valuable deposits of copper and iron also are found in the neighboring hills. The soil is of wonderful fertility, and most of the inhabitants now give their attention to agriculture and cattle raising. Large quantities of hides and of ipecacuanha are sent thence to Rio de Janeiro by caravans of mules. **II.** A river of Brazil, which rises in the district of Diamantino, in the Parecis mountains, not far from the sources of the Paraguay, and flows in a generally southern direction until it joins the Paraguay in lat. 18° S., lon. 57° 50′ W. It is navigable for about two thirds of its length, and forms an important channel of communication for the town of Cuyaba, although its current is rapid and headlong for 60 m. below that place. Above the town it is navigable only for canoes, being much broken by rapids.

CUYAHOGA, a N. E. county of Ohio, bordering on Lake Erie, and intersected by Cuyahoga river; area, 426 sq. m.; pop. in 1870, 132,010. The surface is level and the soil fertile. Sandstone is abundant, and is much used for grindstones and for building. It is traversed by the Ohio canal and numerous lines of railroad

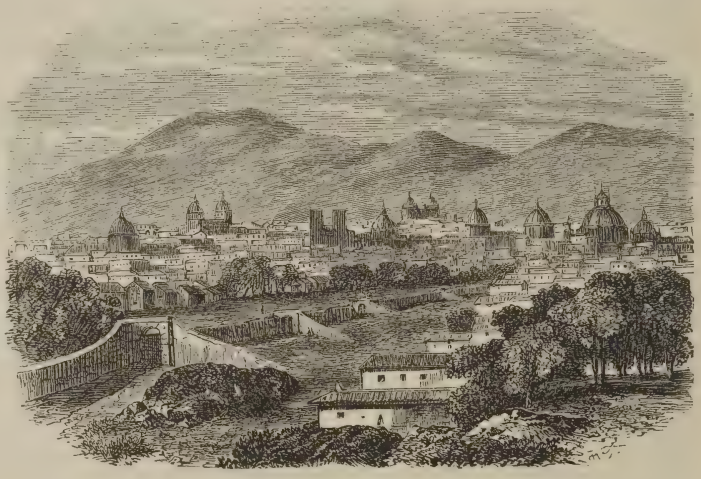
centring at Cleveland. The chief productions in 1870 were 78,488 bushels of wheat, 350,702 of Indian corn, 419,176 of oats, 484,724 of potatoes, 44,640 tons of hay, 21,946 gallons of wine, 1,204,111 lbs. of cheese, 786,430 of butter, and 105,175 of wool. There were 6,902 horses, 15,725 milch cows, 4,862 other cattle, and 25,875 sheep. There are numerous manufactories, mostly in Cleveland, the county seat.

CUYAHOGA, a river of Ohio, rising in the N. E. part of the state, and flowing through Portage, Summit, and Cuyahoga counties to Lake Erie at Cleveland. At a place called Cuyahoga Falls, in Summit county, it descends 200 ft. in about 2½ m. Its course is very circuitous, and it affords good water power.

CUYP, or **Kuyp, Albert,** a Dutch painter, born at Dort in 1605, died after 1683. His father, Jacob Gerritse Cuyp, a painter of landscapes and animals, and one of the founders of the academy of St. Luke in Dort, was his first and probably his only master. A strict Calvinist and devoted to his art, he passed the greater part of his time at a small country seat near Dort, where his room, the walls still covered with designs for which he rarely received orders, is shown to visitors. There is no record of his death. His pictures were singularly neglected for many years after his death, and it is said that down to 1750 no one of them had sold for more than 30 florins, or about $12. England seems to have been the first to appreciate them, for shortly after this time the demands of English collectors caused a considerable rise in their value; and Horace Walpole, in a letter written in 1774, mentions with astonishment that a picture by Cuyp had just been sold for £290. Within the last 50 years they have frequently brought from 1,000 to 1,500 guineas, and are to be found in great numbers in private and public galleries in England. Cuyp's range of subjects was extensive. He painted scenes on the Maas river, in the neighborhood of Dort, with herds of cattle and horsemen, cavalry skirmishes, horse fairs, sea pieces, moonlights, winter scenes, and interiors, all of which show a high degree of excellence. Some of his drawings, heightened by water colors, are gems of art. His best pictures are his landscapes, to attain perfection in which he made studies in the open air at all hours of the day. Dr. Waagen has summed up his artistic qualities as follows: "In loftiness of conception, knowledge of aërial perspective, with the greatest glow and warmth of serene atmosphere, Cuyp stands unrivalled, and may justly be called the Dutch Claude. In the *impasto*, the breadth and freedom of execution, he greatly resembles Rembrandt." Unlike most Dutch painters, he did not finish his pictures very elaborately, but strove to impress them with the stamp of intellectual rather than of manual labor.

CUZA. See ALEXANDER JOHN I.

CUZCO. I. A central department of Peru, lying chiefly between lat. 13° and 15° S., and lon. 70° and 73° W., comprehending all the region drained by the affluents of the Vilcamaya and the upper course of the Apurimac, and divided into 11 provinces; area, about 45,000 sq. m.; pop. in 1871, 464,000, the majority of whom are Indians. The department abounds in mines. The principal objects of trade are woollen and cotton goods, and leather manufactured by the inhabitants. **II.** A city, capital of the province and department of the same name, situated in a valley about 11,000 ft. above the level of the sea, between the rivers Apurimac and Urubamba, lat. 13° 30′ 55″ S., lon. 72° 4′ 10″ W., 345 m. E. S. E. of Lima; pop. about 50,000, of whom about 15,000 are Indians, distinguished for their industry. The city is regularly laid out, and has a large square in the centre, from which wide and straight streets diverge. The dwelling houses are mostly of stone and roofed with red tiles. There are many fine public buildings, among them a cathedral, several convents, a university, two colleges, a mint, hospitals, and the buildings of the provincial government. The cathedral and the convent of St. Augustine are especially noted for handsome exteriors. The local manufactures are cotton and woollen goods, leather, parchment, jewelry, embroidery, and carved furniture. Besides these, there is a considerable trade carried on



Cuzco.

in iron, timber, and vegetable ivory.—According to the national tradition, Cuzco was the most ancient city of Peru, having been founded in the 11th century by Manco Capac, the first inca, who established there the seat of his empire. The name, according to Garcilaso, signifies navel, and is equivalent to the *umbilicus terrarum* of the ancients. It was called the holy city, and contained a magnificent temple of the sun, richly adorned with gold and silver, to which pilgrims resorted from all parts of the empire. Portions of the walls of this splendid edifice are still to be seen in the Dominican convent which occupies its site. Besides the temple, there were from 300 to 400 inferior places of worship, and the pilgrimage to this Peruvian Mecca was as binding upon the Indian noble as that in the East upon the Moslem. Toward the north it was defended by a spur of the great Cordillera, on which rose a strong fortress, a stupendous specimen of Cyclopean architecture, the ruins of which are still visible; 20,000 men are said to have been employed on this structure, and 50 years consumed in building it. In 1532 Atahuallpa's generals took possession of the famous city, and in the following year (probably on Nov. 15) Pizarro made his entrance into the Peruvian capital. The population of the city was computed at that time by one of the Spanish conquerors at 200,000, and that of the suburbs at as many more; but although this estimate is probably exaggerated, all accounts agree in the remarkable prosperity and beauty of the city, which surpassed all that the Spaniards had yet seen in the new world. The neighborhood of Cuzco frequently became the theatre of chivalrous combats between the Spaniards and the incas, which, according to Prescott, "wanted only the song of the minstrel to throw around it a glory like that which rested on the last days of the Moslems of Spain." The rapacity of the Spanish conquerors soon stripped Cuzco of its ancient splendor; but the appearance of the city and the structure of the houses, many of which still retain the walls of the ancient buildings, recall the glorious era of the incas. The remarkable highway which led over the mountains from Cuzco to the northern part of Peru is still in existence, and is called the incas' road. Cuzco, along with the rest of Peru, proclaimed its independence of Spain in 1821. On Aug. 9, 1835, a victory was achieved there by the Bolivian Gen. Santa Cruz over Gamarra, the commander of the Peruvian forces.

CYANOGEN (Gr. κύανος, blue, and γεννάειν, to produce), a principal ingredient in Prussian blue, being a compound gas consisting of two atoms of carbon and one of nitrogen, and properly designated dicyanogen, the chemical equivalent of which is 60. It is of particular interest, being the first instance known of a compound body performing the part of an element in its combinations. It was discovered by Gay-Lussac in 1814, and may be obtained by decomposing the cyanide mercury in a small glass retort by the heat of a spirit lamp; the mercury sublimes, and the gas passes over. It may also be obtained in combination by heating nitrogenous bodies, as clippings of hides, hoofs, &c., in a close vessel, together with iron and potash or carbonate of potash. The gas as it is produced combines with the potassium and iron to form a ferro-cyanide. Cyanogen is a colorless gas of specific gravity 1·80, possessing a strong pungent odor similar to that of the kernels of peach stones or of prussic (hydrocyanic) acid. It is inflammable, burning with a blue and purple colored flame, and passing into carbonic acid gas and nitrogen. By the cold of —22° F. or the pressure of 3·6 atmospheres it may be liquefied, forming a thin colorless fluid; at the freezing point of mercury it becomes solid. It is absorbed by water, but is soon decomposed in this condition, and forms compounds with the water possessing acid reaction, besides many others of the different elements variously combined. Exposed to a high temperature, the gas is not decomposed; but mixed with two volumes of oxygen, it explodes violently at a red heat, or by the electric spark, separating into carbonic acid and nitrogen. The properties of cyanogen in relation to other bodies are analogous to those of chlorine, bromine, and iodine. It forms an acid with hydrogen (hydrocyanic or prussic acid), and binary compounds with the metals, cyanides, or cyanurets, which readily combine among themselves or with the chlorides and sulphurets, forming double cyanurets, chlorocyanurets, and sulphocyanurets. With oxygen cyanogen unites to form several acids, as cyanic acid, $CyHO$; fulminic acid, $Cy_2H_2O_2$; and cyanuric acid, $Cy_3H_3O_3$. The first is a volatile colorless fluid, with the odor of acetic acid. Its salts are cyanates. Paracyanogen, C_3N_3, is the brown matter which remains in the retort after the preparation of cyanogen. It is insoluble in water, is neither volatile nor fusible, and like cyanogen enters into combination with other elementary bodies.

CYAXARES I. and **II.** See MEDIA.

CYBELE, or **Rhea,** a Greek and Roman divinity, daughter of Uranus or Cœlus and Ge or Terra, wife of Cronos or Saturn, and mother of the highest gods and goddesses. As Saturn insisted on devouring his children, the goddess mother, when she found herself pregnant with Zeus, proceeded, by the advice of her parents, to Lyctus in Crete, where she gave birth to her son. The moment the infant was born, certain pious youths of the neighborhood assembled round him with clashing arms and loud instruments of music, and drowned the child's cries, while his crafty mother hied away to offer her husband a stone wrapped up like a child. The stratagem was successful, and Saturn swallowed the stone. The infant was nursed by shepherd youths, whom Cybele rewarded by initiating them into the mysteries of her worship, and appointing them to be priests and

ministers at her altars. Her worship, wherever established, was of the same Bacchanalian character. Her priests in Phrygia were called Corybantes; in Crete, Curetes; at Rome, Galli;



Cybele.

but everywhere they must be both youths and eunuchs. Though this worship had prevailed from very early times in Greece and Asia, where it may be traced under various names in various countries, it was not introduced at Rome till the period of the second Punic war. Then the image of Cybele or Rhea was brought from Pessinus in Galatia, a temple was raised to her on the Palatine hill, and the festival of the Megalesia was instituted in her honor by the Roman matrons. Cybele is usually represented seated on a throne, with a mural crown from which a veil is suspended. Crouching lions are frequently on the right and left of the throne, and occasionally she appears in a chariot drawn by lions.

CYCADS, a group of the gymnospermous division of the phænogamous or flowering plants,



Cycadoidea megalophylla—Cone and Leaf.

apparently beginning near the close of the carboniferous age, passing their climax in the Jurassic period, and thence gradually declining to the present time. Though related to the coniferous trees in structure and fructification, they are entirely different in habit; they have a simple trunk, with a tuft of large leaves or fronds at the top, resembling a tree fern or a young palm. The fronds unroll in expanding, as in the ferns, but their form resembles palm leaves, though there is no tendency to split longitudinally. They are sometimes 30 ft. high, while the allied genus *zamia* rarely exceeds 3 or 4 ft. They are at present confined to warm regions: the West Indies, Mexico, equatorial South America, southern Africa, Madagascar, southern Asia, Japan, the East Indies, and Australia. They are especially a mesozoic type, having the retrospective features of the palæozoic ferns and the prospective characters of the cretaceous palms.

CYCLADES (Gr. *κύκλος*, a circle), a group of nearly 60 small islands in the Grecian archipelago or Ægean sea, N. of Candia. With the exception of one island, Stampalia, which is under Turkish rule, they belong to Greece, and constitute one of the 13 nomarchies into which the kingdom is divided; area, 926 sq. m.; pop. in 1870, 123,299. It is divided into seven eparchies. The ancient Greeks gave this name to these islands in the belief that they formed a circle around the holy island of Delos, while all the other islands within the same sea were called Sporades, from their being scattered in every direction. In fact, these islands form three distinct, nearly straight and parallel lines running from N. W. to S. E., of which the first, comprising Zea (anc. Ceos), Thermia (Cythnus), Serpho (Seriphus), Siphanto (Siphnus), and Polycandro (Pholegandros), seem to have formed in antediluvian times one mountain chain, connected with the mountains of Attica on the north, and by the island of Milo with the western mountains of Candia on the south; the second, comprising Andro (Andros), Tino (Tenos), Mycono (Myconus), Naxia (Naxos), Amorgo (Amorgos), and Stampalia (Astypalæa), another mountain chain connected with that of Eubœa and the S. W. promontory of Asia Minor; the third, lying between the first and second, and comprising Giura (Gyarus), Syra (Syros), Paro (Paros), Antiparo (Antiparos), Nio (Ios), and Santorin (Thera), may have had a connection with the E. end of Candia. Santorin is still a very remarkable volcanic island. Paro and Antiparo are renowned for their stalactite caves. These islands, once subject to Athens, and the basis of its maritime power, were among the first to shake off the Turkish yoke. Several of them have a fertile soil, producing barley, olive oil, and wine, while others are nearly sterile, yielding principally sulphur and alum. Silk is raised in the islands of Andro and Tino. Many of the inhabitants follow the sea. Syra, or Hermopolis, the capital (pop. 21,000), is a great emporium of the Levantine and Mediterranean trade.

CYCLAMEN, a genus of plants of the order *primulaceæ*, distinguished by a tuberous, orange-shaped root, heart-shaped leaves, flowers (appearing in autumn) of one petal divided into five oblong segments, and by the peculiar flower stalk, which after flowering twists into a spiral and turns over toward the ground, so that the seeds, ripening in this position, fall and produce new plants. The common cyclamen, *C. Europæum*, is very hardy, and flourishes in several countries of the European continent, especially in Italy, where it is called *pane porcino*, from the fondness of swine for the tuberous root. *C. Persicum* is a very ornamental species, and is a favorite garden plant in southern Europe.



Cyclamen Europæum.

CYCLOID (Gr. *κύκλος*, a circle, and *εἶδος*, form), the curve described by a point on the circumference of a circle when the circle rolls along a straight line. A nail in the tire of a wagon wheel, as the wheel rolls along the street, describes a cycloid. It is usually described upon paper as follows: Fasten a bit of black lead to the edge of a coin, for example a cent, so that when the coin is laid flat upon the paper and moved the lead may trace a mark; lay a ruler upon the paper and place the edge of the coin where the lead is attached against the edge of the ruler; roll the coin along the edge of the ruler, and the lead will describe a cycloid. When the coin has rolled a distance equal to one half its circumference, the lead will be at a distance from the ruler equal to the diameter of the coin; when it has rolled a distance equal to the circumference of the coin, the lead will again be next to the ruler. The lead will thus describe an arch which to the eye appears like the half of an ellipse or oval, but is in reality an entirely different curve. If the coin continue to roll along the ruler, another arch exactly like the first will be described, and so on indefinitely. In mathematics these arches are all regarded as forming one curve, of which each arch is a branch. As they are all merely repetitions of the first one, the investigation of the properties of one is sufficient; and unless the contrary is stated, the word "cycloid" is generally understood as meaning a single branch. The straight line along which the circle rolls is called the base of the cycloid, and its length equals the circumference of the circle. The length of the cycloid is four times the diameter of the circle; and the area of the surface included between the cycloid and its base is three times the area of the circle. If a cycloid be inverted so that its concave side is upward, then a body rolling down the curve will reach the lowest point in the same time from whatever point of the curve it starts. The cycloid is also called the brachystochrone (Gr. *βράχιστος*, shortest, and *χρόνος*, time), or the curve of swiftest descent, because a body starting from any point of the curve, when in its last mentioned position, will reach its lowest point in less time than it would had it rolled from the same starting point along any other curve or straight line. The cycloid is one of the most important curves in the theory of mechanics, and the investigation of its properties was among the earliest applications of the differential calculus.

CYCLOIDS, an order of bony fishes, established by Agassiz. See COMPARATIVE ANATOMY.

CYCLONE, a storm of wind moving in immense whirls, and at the same time sweeping onward over the surface. Cyclones are usually 200 to 300 m. in diameter, sometimes more than 1,000 m. Their central point is calm, and this moves forward from 2 to 40 m. an hour. These storms originate outside the equatorial belt between the tropics, and move toward the poles. In the southern hemisphere the rotation is in the same direction with the hands of a watch placed with the face upward; in the northern, the direction is reversed. (See HURRICANE.)

CYCLOPÆDIA, or Encyclopædia (Gr. *κύκλος*, a circle, and *παιδεία*, education), originally the cycle of the seven liberal arts and sciences which constituted with the ancients the course of education for the higher class of citizens, viz.: grammar, arithmetic, geometry, music, astronomy, dialectics, and rhetoric. Quintilian mentions it as the orb or full circle of learning: *Orbis illa doctrinæ quam Græci ἐγκυκλοπαιδείαν vocant.* In its modern acceptation the word commonly designates a summary of human knowledge, either in one or in all departments, arranged either systematically according to the logical connection of topics, or lexicographically according to the alphabetical succession of terms; and therefore distinguished as either general or special, systematic or alphabetical. Speusippus, the nephew and disciple of Plato, is usually accounted to have written the first cyclopædic work, under the title *Διάλογοι τῶν περὶ τὴν Πραγματείαν Ὁμοίων*, which has not been preserved. The work of Aristotle on the sciences (*Περὶ Ἐπιστήμων*), the lost books of Varro entitled *Rerum Hu-*

manarum et Divinarum Antiquitates, and the *Historia Naturalis* of Pliny, approached to the character of cyclopædias. The last is a vast compilation, treating of 20,000 matters of importance, drawn from about 2,000 volumes. Astronomy, mathematics, natural philosophy, botany, mineralogy, medical science, arts, agriculture, all came within the compass of his researches. His work has the merit of showing the progress which science and the arts had made down to the time at which he wrote. The collections of Stobæus, Suidas, and especially of Marcianus Capella (about A. D. 480), and of Isidorus Hispalensis (about 630), may also be regarded as works of the same character. The *Satyra* of Capella is a confused exposition of the seven liberal arts, and the *Origines* of Isidorus furnishes a complete knowledge of the state of mental culture at the epoch of its publication. Cyclopædias were not uncommon in the middle ages, under the titles of *Summæ* and *Specula*. One of the most celebrated is the *Speculum Historiale, Naturale et Doctrinale*, by the indefatigable Dominican Vincent of Beauvais (Vincentius Bellovacencis, about 1250), to which a *Speculum Morale*, by an unknown author, was afterward added. This repository of scholastic science, consisting mostly of extracts from the works of writers of the time, is particularly valuable for the light it sheds on the literary history of that period. The first edition was published at Strasburg (7 vols. fol., 1473–'6), and the last at Douai (4 vols. fol., 1624). Of mediæval particular cyclopædias, or complete treatises on special subjects, the *Summa Theologiæ* of Thomas Aquinas is an eminent example. Alfarabius enriched the 10th century with a cyclopædia which, on account of its systematic subdivision of the various branches of knowledge, might be justly compared to works of the same denomination in later centuries. Casiri describes it, in his *Bibliotheca Arabico-Hispana Escurialensis*, as a work *ubi scientiarum, artiumque liberalium, synopsis occurrit, una cum accurata et perspicua earum notitia, definitione, divisione, methodo*. In the 16th century several works of a cyclopædic character appeared, such as the *Margarita Philosophica* of Reisch (Freiburg, 1503, and Basel, 1583); the *Cyclopædia* of Ringelberg (Basel, 1541), a small thick volume, consisting of concise treatises on grammar, logic, and other branches; the *Encyclopædia seu Orbis Disciplinarum Epistemon* of Scalich (Basel, 1559); and the *Idea Methodicæ et Brevis Encyclopædiæ, seu Adumbratio Universitatis*, by Martini (Herborn, 1606). These were followed by Alsted's more elaborate work, *Cursus Philosophici Encyclopædia* (4 vols., Herborn, 1620; afterward entitled *Scientiarum Omnium Encyclopædia*, Herborn, 1630, and Lyons, 1649), which is commonly referred to as the most celebrated of the early cyclopædias. Its plan is not unlike that of Ringelberg, but its subjects are more varied and more elaborately treated. It consists of 35 books, of which the first 4 contain an explanation of the nature of the subjects discussed in the rest. Then follow 6 on philology; 10 on speculation and 4 on practical philosophy; 3 on geology, jurisprudence, and medicine; 3 on the mechanical arts; and 5 on history, chronology, and miscellaneous topics. This work was held in high estimation till the close of that century. In the early part of the 17th century appeared also the *De Dignitate et Augmentis Scientiarum* (1605) and the *Novum Organum Scientiarum* (1620) of Lord Bacon; works not voluminous, but rich in deep and acute thinking, and in which he laid the foundation of a logical arrangement of the sciences. After his time appeared a multitude of cyclopædias designed for the instruction of the young and uninformed. Such were the *Science des personnes de la cour, de l'épée et de la robe*, by Chevigny (5th ed. by Limiers, 4 vols., Amsterdam, 1717), and the *Pera Librorum Juvenilium*, by Wagenseil (5 vols., Altdorf, 1695). Treatises written to bring universal knowledge into systematic order also became more numerous. This was the aim of the *Polyhistor* of Morhof (Lübeck, 1688), and of the *Cours d'études* of Condillac. In Germany, Sulzer endeavored to show the essential connection of all branches of learning in his *Kurzer Inbegriff aller Wissenschaften* (Berlin, 1756); and his classification was adopted and improved by many succeeding cyclopædists, as J. M. Gesner, in his *Primæ Lineæ Isagoges in Eruditionem Universam* (Göttingen, 1774), Reimarus (1775), Adelung (1778), Reuss (1783), Klügel (1788), Buhle (1790), and Büsch (1795). Eschenburg, in his *Lehrbuch der Wissenschaften* (Berlin, 1792), was the first to attempt a cyclopædia of the sciences on the principles of the Kantian philosophy. He found imitators in Burdach, Kraus, and others. Complete logical classifications were made also by Krug, in his *Versuch einer systematischen Encyklopädie der Wissenschaften* (Wittenberg, 1796–'8); by Schmid, in his *Allgemeine Encyklopädie und Methodologie der Wissenschaften* (Jena, 1811); by Jäsche, in his *Einleitung zu einer Architektonik der Wissenschaften* (Dorpat, 1816); by Kronburg, in his *Allgemeine Wissenschaftslehre* (Berlin, 1825); by Gruber, in the introduction to the second volume of Ersch and Gruber's *Encyklopädie;* and by Kirchner, in his *Akademische Propädeutik* (Leipsic, 1842).—Although the lexicographic arrangement had been employed by Suidas, it was but slowly brought into use after the revival of learning. It was long before the idea occurred that it might be used as the basis of a universal repertory of human learning, and still longer before it was employed as the vehicle of general treatises. The first lexicographic cyclopædias contained notices only of celebrated persons and places, as the *Dictionarium Proprium Nominum Virorum, Mulierum, Populorum, Idolorum, Urbium, Fluviorum, Montium*, &c., by Robert Ste-

phens (Paris, 1544); and the *Dictionarium Historicum et Poeticum*, by Charles Stephens (Paris, 1553; enlarged by R. Lloyd, Oxford, 1671, and London, 1686). The *Grand dictionnaire historique* of Moréri (Lyons, 1673), and the *Dictionnaire historique et critique* of Bayle (Rotterdam, 1696), were the most important of many biographical cyclopædias of this period, the latter treating also incidentally of many scientific questions. Of larger compass and of less thorough execution were the *Lexicon Universale Historico-Geographico-Chronologico-Poetico-Philologicum*, by J. J. Hofmann (Basel, 1677; supplement added, 1683; new ed., Leyden, 1698), and the *Bibliotheca Universalis Sacro-Profana*, by Coronelli (Venice, 1701), which was intended to form 45 volumes, but was continued only into the letter C in 7 volumes.—The first English cyclopædia was the "Lexicon Technicum, or an Universal Dictionary of the Arts and Sciences," by John Harris (2 vols., London, 1706–'10). It explained both the terms of art and the arts themselves; but it was in fact limited almost exclusively to the mathematical and the physical sciences, and hence was far from fulfilling its purpose. The "Cyclopædia" of Ephraim Chambers (2 vols. large fol., London, 1728) was also termed a general dictionary of the arts and sciences, and was the first work in which knowledge was subdivided under appropriate heads, which were placed in alphabetical order, and treated so as to exhibit at the same time a complete account of the various branches and of their connections and dependencies. "His view," he says, "was to consider the several matters, not only in themselves, but relatively, or as they respect each other; both to treat them as so many wholes, and as so many parts of some greater whole, their connection with which to be pointed out by reference; so that by a course of references from generals to particulars, from premises to conclusions, from cause to effect, and *vice versa*, *i. e.*, from more to less complex, and from less to more, a communication might be opened between the several parts of the work, and the several articles be in some measure replaced in their natural order of science, out of which the alphabetical order had removed them." Yet Chambers remained far from attaining his object, for the ramifications are so varied and minute that one would seek in vain in his volumes for anything like a substitute for separate treatises, or for more, under many heads, than short and unconnected elucidations, or mere definitions and incomplete explanations. But with all its defects, this work must be regarded as the production of a mind of superior compass and vigor, and as the fruit of remarkable research and diligence. Five editions were published within 18 years. It was translated into French and Italian, and its plan was highly applauded in the preliminary discourse of the great French *Encyclopédie*. Its success gave rise to a number of similar works, mostly modelled after it. The first of these was the "New and Universal Dictionary of Arts and Sciences," by John Barrow (1 vol. fol., London, 1751; supplementary vol. added, 1754). Its only recommendation, as compared with its predecessor, consisted in an enlarged number of articles on mathematical subjects, on the mechanical arts, and on naval affairs; to make room for which, church history and all scholastic topics were excluded. This was followed in 1754 (2d ed., 1764) by a "New and Complete Dictionary of Arts and Sciences," comprised in 4 large 8vo vols., written, according to the title page, "by a society of gentlemen," and commonly called, from the name of its publisher, "Owen's Dictionary." It is distinguished by the general brevity of its articles, a quality which enabled its compilers to widen its range in the departments of geography, commerce, and natural history. In 1766 was published the "Complete Dictionary of Arts and Sciences," in 3 vols. fol., a work compiled under the joint direction of Henry Croker, Thomas Williams, and Samuel Clark; the theological, philosophical, and critical branches being edited by the first; those of anatomy, medicine, and chemistry, by the second; and the mathematical by the last. Notwithstanding this division of labor, the work was not marked either by excellence in the respective departments, or method in their arrangement. In 1745 Dr. De Coetlogon published in London a "Universal History of Arts and Sciences," which was largely composed of complete treatises on distinct arts and sciences, and may therefore have suggested the plan of the "Encyclopædia Britannica." The latter work made its first appearance in Edinburgh in 1771, in 3 vols. 4to. Instead of attempting to elucidate the sciences by a number of separate articles corresponding to their technical titles or sections, introduced in alphabetical order, it treated each science completely in a systematic form under its proper denomination; the technical terms and subordinate heads being also explained alphabetically, when anything more than a reference to the general treatise was required. This plan was prosecuted on a wider scale and with more maturity of execution in the subsequent editions. The objects aimed at in the early cyclopædias were in this way reconciled with the lexicographic arrangement, while its adaptation to particular topics was in no respect impaired. The editor and principal compiler of this first edition was William Smellie, a scholar particularly conversant with natural history, although by profession a printer. The second edition (extended to 10 vols., 1776–'83) was chiefly remarkable for the addition of the two popular departments, history and biography. The third edition (18 vols., 1786–'97; a supplement of 2 vols. was added afterward) contained valuable contributions in speculative philosophy, ancient erudition, and physical science, from the pens of Dr. Gleig, Dr. Doig, and Prof. Robison, which attracted general attention, and gave to the work

a new and more dignified aspect. This edition of the "Encyclopædia Britannica" was republished in Philadelphia by Thomas Dobson (21 vols. 4to, including the supplement, 1798–1803). A fourth edition, increased to 20 vols., was completed in 1810, under the able superintendence of Dr. James Millar. This was enriched with the contributions of Prof. Wallace on pure mathematics. A fifth and a sixth edition soon followed, but were little more than reprints of the former. While these were in progress, a supplement extending to 6 vols. made its appearance, edited by Macvey Napier, and published by Archibald Constable. The first half volume was produced in 1815, under the sanction of the name of Dugald Stewart, as the author of the first of those preliminary dissertations on the history of the sciences which, in a more complete state, so greatly adorn and recommend the later editions. Enriched as it was by contributions from the most eminent writers and scholars of the day, including the distinguished philosophers of France, Arago and Biot, the work rose rapidly in public favor. The copyrights of the previous editions having passed into the hands of A. and C. Black of Edinburgh, they immediately commenced the publication of an enlarged edition, under the editorial supervision of Prof. Napier (21 vols., including the later supplement, a general index, and numerous engravings, 1830–'42). The eighth edition, with extensive improvements and additions, and an introductory volume of dissertations, was commenced in 1853, and published jointly by A. and C. Black of Edinburgh, and Little and Brown of Boston; the concluding (21st) volume appeared in 1860. For this, as for the preceding editions, articles were furnished by the most distinguished contemporary authors.—The following is a summary of the principal English and American cyclopædias since the commencement of the last quarter of the 18th century:

1. New Dictionary of Arts and Sciences, or an Universal System of Useful Knowledge. By E. Middleton and others. 2 vols. folio, London, 1778.
2. New Royal Encyclopædia. By W. H. Hall. 3 vols. folio, London, 1789. (2d ed., enlarged by J. Lloyd, with plates, 3 vols. folio, 1796.)
3. The Encyclopædia Londinensis, or Universal Dictionary of Arts, Sciences, and Literature. Projected and arranged by John Wilkes. 24 vols. 4to, London, 1797–1829.
4. The English Encyclopædia, or a Dictionary of Arts and Sciences. 10 vols. 4to, London, 1801.
5. Rees's Cyclopædia, or Universal Dictionary of Arts, Sciences, and Literature. 39 vols. with 6 vols. of plates, London, 1802–'19. (This work, comprising the various articles in Chambers's Cyclopædia, with additions and improvements, was far more extensive than any previous similar work in England, being particularly complete in the technical department. An American edition was published at Philadelphia, 47 vols., 1810–'24, which, proving unsuccessful from the magnitude and difficulty of the enterprise, was at last disposed of by lottery.)
6. Gregory's Dictionary of Arts and Sciences. 2 vols. 4to, London, 1806. (A compilation formerly in high repute. American ed., 3 vols. 4to, Philadelphia, 1815–'16.)
7. Nicholson's British Encyclopædia, illustrated with engravings by Lowry and Scott. 6 vols. 8vo, London, 1809. (3d American ed., Philadelphia, 12 vols. 8vo, 1819.)
8. The Imperial Encyclopædia. By W. M. Johnson and T. Exley. 4 vols. 4to, London, 1809–'14.
9. The Edinburgh Encyclopædia. Conducted by Sir David Brewster. 18 vols. 4to, Edinburgh, 1809–'30. (This important work was especially rich in its scientific department. American ed., improved by the addition of numerous articles relative to the American continent, Philadelphia, 1832.)
10. The Encyclopædia Metropolitana, or Universal Dictionary of Knowledge, on an Original Plan, comprising the twofold Advantage of a Philosophical and an Alphabetical Arrangement, with appropriate Engravings. Edited by Edward Smedley, Hugh James Rose, and Henry John Rose. 25 thick vols. with 3 additional vols. of plates and one of index, London, 1815–'45. (The divisions of this work, which follow a system of universal knowledge projected by S. T. Coleridge, are as follows: Vols. 1, 2, pure sciences; 3–8, mixed and applied sciences; 9–13, history and biography; 14–25, a miscellaneous lexicon. A cabinet edition was published in small 8vo volumes. In this large collection are contained many complete treatises of great value, as the "Science of Method" of Coleridge, the "Logic" and "Rhetoric" of Archbishop Whately, portions of Roman history by Dr. Arnold, and works on the history of moral and metaphysical philosophy by F. D. Maurice.)
11. The Encyclopædia Edinensis. By James Millar. 6 vols. 4to, Edinburgh, 1816.
12. The Encyclopædia Perthensis, with Plates. Attributed to Millar. 23 vols. 8vo, London, 1816.
13. The London Encyclopædia, or Universal Dictionary of Sciences and Arts, Literature, and Practical Mechanics. By Thomas Curtis. 22 vols. 4to, with an additional vol. of maps, London, 1829.
14. The Encyclopædia Americana, a Popular Dictionary of Arts, Sciences, Literature, History, Politics, and Biography; on the basis of the 7th ed. of the German *Conversations-Lexikon*. Edited by Francis Lieber, assisted by E. Wigglesworth and T. G. Bradford. 13 vols. 8vo, Philadelphia, 1829–'33. (Supplementary vol., edited by H. Vethake, 1847.)
15. Lardner's Cabinet Cyclopædia, comprising a series of original works on History, Biography, Literature, the Sciences, Arts, and Manufactures. 132 vols. small 8vo, London, 1830–'46. (Among the numerous valuable treatises in this series are works of Herschel on astronomy, of Brewster on optics, Mackintosh's "History of England," Sismondi's "Italian Republics," Scott's "History of Scotland," and Thirwall's "History of Greece.")
16. Partington's British Cyclopædia. 12 vols. 8vo, London, 1832.
17. The Penny Cyclopædia of the Society for the Diffusion of Useful Knowledge. Edited by George Long. 27 vols. small folio, London, 1833–'43; 2 supplementary vols., 1846–'51; 2d supplement, 1 vol., 1856.
18. The Popular Encyclopædia, or Conversations Lexicon; being a General Dictionary of Useful Knowledge, with Dissertations by Eminent Writers. 7 vols. royal 8vo, Glasgow, 1841.
19. Brande's Dictionary of Science, Literature, and Art. Royal 8vo, London, 1842; 2d ed., 1852–'3; American ed., New York, 1843; new and revised ed., 3 vols., London, 1865–'7.
20. The National Cyclopædia of Useful Knowledge. 12 vols. small 8vo, London, 1847–'51; Boston, 1853. (This is an abridgment of the "Penny Cyclopædia.")
21. The Iconographic Encyclopædia of Science, Literature, and Art. Translated from the German of J. G. Heck, with additions, and edited by Spencer F. Baird. 4 vols. royal 8vo of text, and 2 vols. of plates, New York, 1851; reprinted, 1869.
22. The English Cyclopædia, a New Dictionary of Universal Knowledge. Conducted by Charles Knight. 20 vols. 4to, London, 1854–'61; supplements to 1867–'8. (This work is based upon the "Penny Cyclopædia," and is divided into the four departments of Geography, Natural History, Biography, and Arts and Sciences.)
23. The New American Cyclopædia. Edited by George Ripley and Charles A. Dana. 16 vols. royal 8vo, New York, 1857–'63.
24. Chambers's Encyclopædia. 10 vols. 8vo, Edinburgh and Philadelphia, 1860–'68; new ed., 1871–'2.
25. Zell's Popular Encyclopædia. 2 vols. 4to, illustrated, Philadelphia, 1871.
26. The National Encyclopædia. 8vo, New York, 1872 *et seq.*
27. The American Cyclopædia. The present work, a revised and illustrated edition of the "New American Cyclopædia." New York, 1873 *et seq.*

A cyclopædia which possesses a unique feature in being printed in a language different from that of the country of its publication, is Prof. A. J. Schem's *Deutsch-Amerikanisches Conversations-Lexicon*, now (1873) in course of publi-

cation in New York. It is in German, and intended especially for German-American readers. Besides these works a multitude of cyclopædias have been published, intended to impart information in special branches of knowledge, as Loudon's "Encyclopædia of Gardening" (London, 1822; various editions till 1850), and of "Agriculture, Gardening, Architecture, Plants, Trees," &c. (London, 1825); Todd's "Cyclopædia of Anatomy and Physiology" (5 vols., London, 1836–'56; new ed., 6 vols., 1859); Nichol's "Cyclopædia of the Physical Sciences;" Chambers's "Cyclopædia of English Literature" (latest eds., 2 vols. 8vo, London and Philadelphia, 1872); Duyckinck's "Cyclopædia of American Literature" (2 vols. 8vo, New York, 1855; 2d ed., 1866); Homans's "Cyclopædia of Commerce" (New York, 1858); Allibone's "Critical Dictionary of English Literature" (3 vols. large 8vo, Philadelphia, 1858–'71); Ure's "Dictionary of Arts, Manufactures, and Mines" (3 vols., London, last ed., 1867); Watts's "Dictionary of Chemistry" (5 vols., London, 1870; supplement, 1872); Woodward and Cates's "Encyclopædia of Chronology" (1 vol., London, 1872); and many others.—On the continent, as well as in England, the "Cyclopædia" of Ephraim Chambers gave an impulse to the desire for such publications. A second edition of the French translation having been proposed, it was resolved, upon the suggestion of the abbé Gua de Malves, to divide the manuscript among several literati, in order to elaborate the respective articles, that they might be combined into a cyclopædia at once more original and more comprehensive than the English model. The abbé having disagreed with the bookseller in the outset, Diderot and D'Alembert became the principal managers. Thus originated the great French *Encyclopédie*, which, at first intended to consist of 10, was enlarged to 28 folio volumes. Its title is *Encyclopédie ou dictionnaire raisonné des sciences, des arts et des métiers, par une société de gens de lettres, mis en ordre et publié par M. Diderot, et quant à la partie mathématique par M. d'Alembert.* The first 7 vols. appeared in Paris (1751–'7); the remaining 10 vols. of text were published, according to the title page, at Neufchâtel (1765); and there were 11 additional vols. of plates. A supplement of 4 vols., with 1 additional vol. of plates, was issued at Amsterdam (1776–'7). A *Table analytique et raisonnée des matières* was added in 2 vols. (1780). The work, though several times interrupted by the government, was everywhere received with enthusiasm, and gave to the editors and principal collaborators a place in European history, and in the history of philosophy, under the name of the "Encyclopædists." Around Diderot and D'Alembert were grouped Voltaire, Rousseau, Turgot, Helvétius, Duclos, Condillac, Mably, Buffon, La Harpe, Marmontel, Raynal, Morellet, Grimm, Saint-Lambert, and many others. Four new editions were rapidly issued, at Leghorn (33 vols., 1770), at Lucca (28 vols., 1771), at Geneva (39 vols., incorporating the supplements, 1777), and at Lausanne and Bern (36 vols., 1778). It was the basis also of the cyclopædia of Felice (48 vols., with 10 additional vols. of plates, Yverdun, 1770–'80), among the collaborators of which were Euler, Lalande, and Haller. The *Discours préliminaire*, which is ranked among the *chefs d'œuvre* of the age, was written by D'Alembert. Its style is severe and simple, adhering closely to the language proper to philosophy, yet rendering clear and palpable the most abstract ideas. The work itself exerted an immense influence in hastening the greatest political revolution of modern times. It was designed at once to reveal to the human mind the extent of its power by unfolding the picture of its riches, and to emancipate human thought by treating freely every science and doctrine; and it was conceived in a spirit indifferent, if not antagonistic, to the institutions, usages, and faith of the time. It is the most complete expression of the philosophical, critical, irreligious, and reformatory tendencies of the 18th century. Its generally polished and correct style, and its blending of philosophy, elegance, and gayety, made it fashionable in courtly society, and contributed much to its authority and influence. To counteract the disorganizing tendencies of the *Encyclopédie*, and to apply a more methodical system, was the design of the *Encyclopédie méthodique*, the most elaborate work of the kind extant in France, published by Panckoucke and Agasse (201 vols., including 47 vols. of plates, Paris, 1781–1832). Its method consists in assigning to each science a special alphabetical dictionary, and the whole work is therefore a collection of 48 distinct cyclopædias or dictionaries of science, literature, and art, with dissertations interspersed throughout. Among the editors were Quatremère de Quincy for architecture, Bergier for theology, Mongez for antiquities, Ginguené for music, Lamarck for natural history, and Vicq d'Azyr, Cassini, Latreille, Tessier, Naigeon, Condorcet, and Lacretelle for other departments. A Spanish translation of it (vols. i.–xi., Madrid, 1780–1806) was commenced, but not completed. The following are the most important of recent French encyclopædias: 1. *Encyclopédie moderne: Dictionnaire abrégé des sciences, des lettres, des arts, de l'industrie, de l'agriculture et du commerce*, conducted by Courtin (24 vols. 8vo, Paris, 1823–'32; 2d ed., 1843; new ed., with additions, 27 vols., with 3 of plates and 12 of supplement, 1844–'63). 2. *Dictionnaire de la conversation et de la lecture*, directed by W. Duckett (52 vols., Paris, 1835–'9; 2d ed., revised and enlarged, 16 vols. large 8vo, 1852–'8; supplement, 1864 *et seq.*). This cyclopædia is very unequally executed, but many of its articles are unusually complete and entertaining. 3. *Encyclopédie des gens du monde: Répertoire universel des sciences, des lettres et des arts, par une société de savants, de littérateurs et d'artistes* (44 vols. 8vo, Paris,

1833–'44). 4. *Encyclopédie du XIX^e^ siècle*, a Roman Catholic work, published by Ange de Saint-Priest (28 vols., Paris, 1839–'52). 5. *Encyclopédie catholique: Répertoire universel et raisonné des sciences, des lettres, des arts et des métiers, avec la biographie des hommes célèbres*, directed by the abbé Glaire and Viscount Walsh (18 vols. 4to, Paris, 1840–'48; supplement, 1859 *et seq.*). 6. *Encyclopédie nouvelle, ou dictionnaire philosophique, scientifique, littéraire et industriel*, edited by P. Leroux and J. Reynaud (8 vols., Paris, 1834 *et seq.*). This unfinished work contains many remarkable articles, and is less a dictionary of general knowledge than a series of dissertations. Its editors were distinguished philosophers of the St. Simonian school; the collaborators were few, and the elaborate articles present throughout a unity of view and doctrine. 7. *Dictionnaire des sciences philosophiques, par une société de professeurs de philosophie*, directed by A. Franck (5 vols., Paris, 1844–'52). 8. *Dictionnaire général de biographie, d'histoire, de géographie, des antiquités et des institutions*, &c., by Dezobry and Bachelet (2 thick 8vo vols., Paris, 1857). 9. *Dictionnaire universel des sciences, des lettres et des arts*, by Bouillet (1 vol. 8vo, Paris, 9th ed., 1870). 10. *Dictionnaire universel d'histoire et de géographie*, by Bouillet (1 vol. 8vo, Paris, 22d ed., 1871). 11. *Dictionnaire universel du XIX^e^ siècle*, by Pierre Larousse (8 vols. 4to, to the letter G, Paris, 1867–'73).—Among the early German cyclopædias, the most celebrated is the *Oekonomisch-technologische Encyklopädie*, commenced at Berlin in 1773 by Krünitz, and continued successively by F. J. Flörke, H. G. Flörke, Korth, and C. D. Hoffmann; of which upward of 200 vols. 4to have appeared. Though originally limited to economy and technology, it has become almost a general cyclopædia. A new, unchanged edition of the first 97 volumes appeared at Berlin (1782–1814), and another edition (32 vols., Berlin, 1785–1812) includes 116 volumes of the original work. The *Deutsche Encyklopädie*, begun at Frankfort by Köster (1778), and continued by Roos to the 23d volume, as far as the letter K (1804), remains unfinished. It excludes biography, geography, history, and ancient literature. The *Allgemeines Lexikon der Künste und Wissenschaften*, by J. T. Jablonski, appeared in Leipsic (1721; new ed. at Königsberg, 2 vols., 1748–'67). Theology, history, and geography were excluded from it. Hegel's *Encyclopädie der philosophischen Wissenschaften* (Heidelberg, 1817; 3d ed., 1830), though bearing this general title, is in reality only an exposition of his system of philosophy. The *Grosses vollständiges Universal-Lexikon aller Wissenchaften und Künste*, edited successively by Ludewig, Frankenstein, Longolius, and others, and commonly called Zedler's Lexicon, after the publisher (64 vols., Halle and Leipsic, 1732–'52; 4 supplementary vols. added, 1751–'4), is still useful on account of the citations, and of its carefully prepared genealogical articles. The most comprehensive German work of this character is the celebrated *Allgemeine Encyklopädie der Wissenschaften und Künste* of J. S. Ersch and J. G. Gruber, late professors at Halle (Leipsic, 1818 *et seq.*; not yet concluded). In 1831 the undertaking passed from the hands of Enoch Richter, who began it, to the Brockhaus firm, its present publishers. The work is divided into three sections, the first including A–G, the second H–N, and the third the remaining letters of the alphabet. The sections are prosecuted contemporaneously, the first since the death of Ersch being edited by Gruber and M. H. E. Meier; the second, by A. G. Hoffmann in Jena; and the third, by M. H. E. Meier in Halle. About 150 large 4to volumes have (1874) been issued. This cyclopædia is esteemed the most learned and thorough that has appeared in any literature. Biographies of the living are excluded from it. A new epoch in the literature of cyclopædias began with the publication of the *Conversations-Lexikon* (6 vols., Leipsic and Amsterdam, 1796–1810), a work of unequalled popularity, which has passed through 11 successive editions at home, and been translated into numerous languages abroad. The idea of the work originated with Dr. Löbel; it was, however, completed under the inspection of F. A. Brockhaus, who conducted the second edition (10 vols., 1812–'19). It was originally designed for persons who desired to take part in the conversation of well informed circles; but this distinctive feature has been to a certain degree changed by numerous improvements in successive editions, so that its present title, *Allgemeine deutsche Real-Encyklopädie für die gebildeten Stände* (*Conversations-Lexikon*), conveys a clearer idea of its general character. The 11th edition was published at Leipsic (15 vols., 1864–'8), and a supplement in 2 vols. was added in 1872–'3. Several important cyclopædic works have been issued by Brockhaus, in connection with the *Conversations-Lexikon*, as the *Conversations-Lexikon der neuesten Zeit und Literatur* (4 vols., Leipsic, 1832–'4); the *Conversations-Lexikon der Gegenwart* (4 vols., 1838–'41); the *Gegenwart*, a periodical, in which the alphabetical order was abandoned, but which consisted of essays giving a cyclopædic exhibition of the present time (12 vols., 1848–'56); and *Unsere Zeit*, a similar monthly, now in progress (1857 *et seq.*). The *Universal-Lexikon der Vergangenheit und Gegenwart* of Pierer (26 vols., Altenburg, 1824–'36; 6 supplementary vols., 1840–'47; 2d ed., 34 vols., 1840–'46; 3d ed., 17 vols., 1849–'52; supplement of 6 vols. added, 1851–'4, and of 2 vols., 1855; 5th ed., 19 vols., 1869–'72) is admirable on account of its universality and the brevity and completeness of its statements. The other principal German cyclopædias are: *Encyklopädisches Sachwörterbuch* (21 vols., Zeitz, 1792–1806; 2d ed., 3 vols., 1822–'3), which excludes biographies and natural his-

tory; the *Conversations-Lexikon für alle Stände* (8 vols., Leipsic and Halberstadt, 1823–'8), often called from its publishers the "Brüggemann Cyclopædia;" the *Damen-Conversations-Lexikon* (10 vols., Leipsic, 1834–'8; 2d unchanged ed., Adorf, 1846); Meyer's *Conversations-Lexikon* (50 vols. 12mo, Hildburghausen, 1839–'55), which is more comprehensive than any other conversations-lexicon; a new *Conversations-Lexikon* by Meyer (Hildburghausen, 1856 *et seq.*; abridged ed., under the title of *Meyers Hand-Lexikon*, 1870–'72); the *Conversations-Lexikon für alle Stände*, published by Wigand (15 vols., Leipsic, 1846–'52); and the *Allgemeine Real-Encyklopädie, oder Conversations-Lexikon für das Katholische Deutschland*, by W. Binder and others (12 vols., Ratisbon, 1846–'51).—The most important Italian cyclopædias are the *Nuovo dizionario scientifico e curioso sacro-profano*, by Pivati (12 vols. folio, 1746–'51), and the *Enciclopedia italiana* (Venice, 1854 *et seq.*). Cyclopædias exist also in most other European languages, as, in Danish, the *Almeennyttigt Dansk Konversations-Lexikon*, by P. Larsen (Copenhagen, 1849 *et seq.*); in Swedish, the *Svenskt Konversations-Lexikon* (Stockholm, 1845 *et seq.*); in Polish, the *Encyklopedja powszechna* (28 vols., Warsaw, 1860–'68); and in Spanish, the *Pan-Lexicon*, by Juan Peñalver (Madrid, 1842), the *Biblioteca universal de instruccion* (Barcelona, 1842 *et seq.*), and the *Enciclopedia española del siglo XIX.* (Madrid, 1842 *et seq.*).—The oriental nations have general and special, systematic and alphabetic cyclopædias. The most complete is in Arabic, systematically arranged, and entitled *Miftah es-seadet vemishbah et-tziyadet fi mevtzuat al-ulum* ("The Key of Happiness and the Guiding Beacon in the Objects of the Sciences"), by Mola Ahmed ben Mustapha, commonly called Tash Köpri-Sade. It was translated into Turkish by the son of the author, Kemal ed-Din Mohammed (died about 1623). It divides the sciences into seven classes, rhetoric, eloquence, dialectics, theoretical philosophy, practical philosophy, theoretical positive science, and practical positive science. Tash Köpri-Sade reckoned in all 307 sciences, which his son extended in the Turkish version to 500. A general alphabetically arranged cyclopædia was prepared by Hadji Khalfa (died in 1658). This voluminous writer on the bibliography, geography, and history of the Moslems collected many separate and rare treatises into one body under the title of *Keshf at-thanun en esma il-kutub velfunun* ("The Knowledge of Books and Sciences"). In his introduction he treated of the nature, object, and classification of the sciences; of the history and literature of the sciences in oriental countries; of several special questions concerning the history of learning; and of the Arabic language and literature. The whole of this introduction is translated in Von Hammer's *Encyklopädische Uebersicht der Wissenschaften des Orients* (Leipsic, 1804). These two immense collections were preceded by several cyclopædias more or less complete. The first who among the Arabians made a cyclopædic scheme of the sciences was the celebrated physician known to Europeans as Avicenna (died about 1037). Of his treatise on the nature of the sciences and the method of teaching we are able to judge only from the high commendations of Tash Köpri-Sade, the greatest oriental cyclopædist, who acknowledges obligations to no other of his predecessors. The oldest proper cyclopædia among the Arabians was the *Hadaiko'l-envar fi hakaik il-esrar* ("Garden Flowers, or True Mysteries"), by Takhi ed-Din Mohammed ben Omar er-Rasi (died A. D. 1209), which embraces 60 sciences. About a century later appeared the cyclopædia *Miftah olulum* ("Key of Sciences"), by Serad-sheddin es-Sakaki (died about 1280). This work enjoyed an unrivalled reputation for a century and a half, and more than 100 commentaries were written on it, and even a larger number of epitomes were made. Among the latter was an excellent elaboration of the rhetorical division by Shems ed-Din Mohammed, celebrated as the "preacher of Damascus" (died about 1338). Under Mohammed II., the conqueror of Constantinople, several cyclopædias of large compass were produced. One of these was a learned work on 14 sciences, by an Egyptian named Jelal ed-Din Abderrahman Essoyuti, parts of which were reduced to verse by several scholars. A great cyclopædia in Persian is the *Nefais olfunum fi arais il-uyun* ("Treasures of Knowledge to adorn the Eyes"), which embraces 120 sciences. It is in two parts, the first treating of the pre-Islamitic sciences in five books, the second of the Islamitic sciences in nine books. The *Elfevaid elkhakanie el-Ahmed khanie* ("Useful Results," &c.), by Mohammed Emin ben Sadr esh-Shirvani, is a famous cyclopædia, prepared for the sultan Ahmed I. It treats of 53 sciences in five parts, which, like the parts of an army, are entitled "The Van" (sciences and their order), "The Right Wing" (philological sciences), "The Left Wing" (philosophical sciences), "The Rear" (the ethics of monarchs), and "The Centre" (the sciences of law). The Chinese and Japanese also have great cyclopædias. Almost the whole contemporary learning is contained in the *Ku kin ssé wen lui tsiu* ("Ancient-Modern four Collections"), by Chu-ho-fu (1246). The *Yung lŏ ta teën*, a great cyclopædia compiled by nearly 2,200 writers, was finished about 1407 in 22,877 volumes. Similar Chinese works in the 17th century attained immense magnitude. The *San tsai tu*, in 130 volumes, treating of the three great powers, heaven, earth, and man, was published in Japanese near the beginning of the present century, and there is a copy of it, both in Japanese and Chinese, in the royal library of Paris.

CYCLOPS (Gr. κύκλωψ, from κύκλος, a circle, and ὤψ, an eye), in Grecian mythology, giants with but one circular eye, in the middle of the fore-

head, of whom there are various traditions. Those of the Odyssey are a race of cannibal shepherds in Sicily, whose chief is Polyphemus. The Cyclops of Hesiod are sons of Cœlus (Uranus) and Terra (Ge), called Brontes, Steropes, and Arges, who were hurled into Tartarus by their father, released and reimprisoned by Saturn, and finally freed by Jupiter, whose thunderbolts they made, as well as Pluto's helmet and Neptune's trident. They were killed by Apollo, in revenge for the death of his son Æsculapius, who was destroyed by Jupiter with the thunderbolts they had furnished him. A later tradition makes them the assistants of Vulcan, forging metallic armor and ornaments for gods and heroes in the volcanoes of Lemnos and Lipari, and under Mt. Etna. According to K. O. Müller, the Cyclops of Hesiod denote the transient disturbances of the order of nature by storms; Grote finds this opinion unsupported by the "Theogony" of the poet.—The name of Cyclopean walls has been given to those huge uncemented walls of unhewn stones, of which remains abound in several regions of Greece, chiefly in Argolis, and in Etruria, and which were probably mostly erected by Pelasgians. In English the word Cyclops is both singular and plural.

CYCLOSTOMES, an order of myzont fishes. See Lamprey.

CYDNUS, the ancient name of a river of Cilicia, rising in the Taurus, and flowing through Tarsus into the Mediterranean sea a little below that town, from which it has received its modern name (Tersus). It was celebrated for the clearness and coolness of its waters, which in the opinion of the ancient physicians possessed medicinal virtues. The mouth of the Cydnus is now choked with sand and other alluvial deposits.

CYDONIA, an ancient city of Crete, rival and enemy of Cnossus and Gortyna, but afterward allied with the former. It stood on the N. W. coast of the island, on the site of the modern Canea, and derived its name from the Cydones, an aboriginal race who founded it. Afterward a colony of Zacynthians settled there. Next came the Samians in the 6th century B. C., and ultimately the Æginetans, who seized the city. It was famous for quinces, which received from it their botanical name.

CYGNUS (Lat., a swan), a northern constellation, made memorable by containing the first star whose distance from the sun was approximately determined. In 1717 the astronomer Halley, from a comparison of the positions of certain fixed stars with their positions as recorded by Ptolemy from observations made by Hipparchus in 130 B. C., concluded that these stars had a proper motion of their own in space. Observations made by astronomers since that time have established this fact in regard to several stars, among which is the star 61 Cygni. This is a double star of the sixth magnitude, and comparatively inconspicuous; but it is so situated relatively to the other stars of the constellation that a new and refined method of observation and calculation could be brought to bear upon it. In 1837–'8 Bessel of the Königsberg observatory succeeded in ascertaining the parallax of this star, which he declared to be equal to 0·348″, a result since confirmed by other astronomers. The distance of this star from the earth is calculated to be equal to 56,239,807,881,401 miles. It would require a period of between nine and ten years for light to traverse this interval.

CYMBALS (Gr. *κύμβαλον*, from *κύμβος*, hollow), brass musical instruments of percussion, consisting of two circular hollowed plates, from 6 to 12 inches in diameter, which are attached to the hands by leather bands, and played by being struck together. The instrument is of great antiquity, having been used in the worship of Cybele, Bacchus, Juno, and all the earlier deities of the Grecian and Roman mythology, and probably by the Jews and most of the eastern nations. It was usually made in the form of two half globes.

CYNÆGIRUS, an Athenian warrior, who greatly distinguished himself at the battle of Marathon, 490 B. C. He was the son of Euphorion, and brother of Æschylus. According to Herodotus, when the vanquished Persians were endeavoring to escape from the fatal field to their ships, he seized one of their triremes, and held on to it till his right hand was cut off. Later accounts exaggerate his exploits.

CYNICS, a school of Greek philosophers, founded by Antisthenes, a pupil of Socrates, in Athens, in the gymnasium Cynosarges, about 380 B. C. The most renowned among them were Diogenes, Crates of Thebes, his wife Hipparchia, and Menippus. They taught that speculative philosophy led to no real knowledge of truth, but only to sophistry and the destruction of virtue and human society, and that the only task of philosophy was to show how men might best live morally and peaceably. In this they harmonized with the Stoics, but they differed from them in defining virtue to be the highest possible simplicity in living, and independence of external or sensual goods, and in carrying this so far that they despised decency, cleanliness, civilization, and labor. Hence their name became a byword, and was sneeringly derived from *κύων* (dog); they were called a doggish set, and the name Cynic is still applied to men who disregard the proprieties of life under the pretence of independence of character.

CYNOCEPHALI, or **Cunocephali** (Gr. *κύων*, dog, and *κεφαλή*, head), a kind of dog-faced baboons, venerated by the ancient Egyptians, and supposed to be endowed with wonderful powers. Their reputation for superior and mysterious intelligence was probably the reason why they were selected as the symbol of intellect and used to represent deities of a peculiarly intellectual character. Thoth, the god of letters and of science, though frequently represented with the head of an ibis, was often delineated with a dog's head or the head of a cynocephalus. The

god Anubis was also represented in this manner, though the head of his image is supposed



Thoth as the God of Letters.

by some writers to be that of a jackal. (See BABOON.)

CYNOSCEPHALÆ, the name of a range of mountains in Thessaly, in the district of Pelasgiotis, famous in history for two battles fought on it. The first was in 364 B. C., when the Thebans, though victorious over the Pheræans, lost their general Pelopidas. The other was in 197 B. C., when the Roman consul Flamininus inflicted a crushing defeat upon Philip, king of Macedon.

CYNURIA, in ancient times, a district of the Peloponnesus, on the gulf of Argolis, inhabited by a rude tribe of Ionians. They were a plundering race, and when attacked would retire to their mountain fastnesses. They were, however, subdued by the Argives at an early period, and about the middle of the 6th century B. C. their country passed into the possession of Sparta. The city of Thyrea (now Astros), with the country around, formed part of this district.

CYPRÆA, a genus of marine shells of the class *gasterpoda*. See COWRY.

CYPRESS. I. A coniferous tree (*cupressus*, Linn.), remarkable for the durability of its



Evergreen Cypress (Cupressus sempervirens).

timber, distinct from the pines and firs by its leaves being reduced to mere scales, and by its cones consisting of a few woody bracts, each of which bears several small angular seeds. The common evergreen or upright cypress (*C. sempervirens*, Willd.) is tapering, with upright branches growing close to the trunk, resembling in general appearance the Lombardy poplar, and attaining in its native condition an altitude of 50 or 60 ft., though sometimes it is found much higher. According to Duhamel, a substance resembling gum tragacanth exudes in small particles from the bark of the young trees, and is collected by the bees. It is this species which, found wild in the islands of the archipelago, particularly Candia, and in Cyprus, Greece, Turkey (chiefly in Asia Minor), and Persia, has been for a long time transferred to gardens for the sake of its deep evergreen branches and leaves, and for the gloomy air it imparts to the localities it occu-



Cupressus sempervirens—Leaves and Cones.

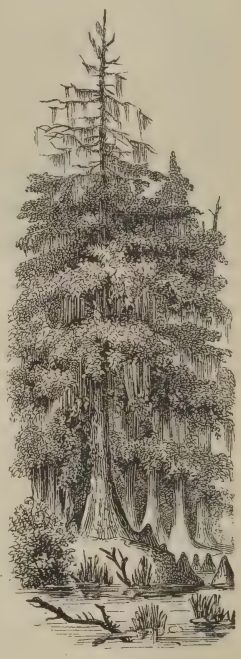
pies. Among the Turks it is much esteemed for planting in cemeteries, and is used to such extent that these grounds resemble forests of cypress. It is the kind mentioned in the Scriptures, and was famous among the ancients. Instances are related of doors and posts made of its wood which had lasted 1,100 years. The odor of the cypress was considered so balsamic, that the eastern physicians used to send their patients troubled with lung complaints to the island of Candia for a residence. Any garden soil suits the cypress, but a deep and rather dry and sheltered soil is best. It can be raised from the seeds, sown in shallow pans, and the young plants on reaching three or four inches in height need to be potted off and kept for a few years with some care to render them fit for transplanting into open grounds. Cuttings taken from the younger branches, if planted during the autumn, will grow and succeed. Little training is necessary, on ac-

count of its natural tendency to grow upright. The *C. horizontalis* (Duhamel) has spreading branches, which when loaded, as they usually are, with large round cones, render the tree a beautiful object. It is considered only a fine variety of the common cypress. The Portuguese cypress (*C. Lusitanica*, Tournefort), a native of Goa in the East Indies, has flexuous, spreading branches, and imbricated, acute, keeled, glaucous, adpressed leaves in four rows. It has been long naturalized in Portugal, where it attains a large size. The weeping cypress (*C. pendula*, Thunberg) is a native of China; it has a large, expanded head, and dichotomous branches, which are much divided; its leaves are imbricated in four rows, are rather stem-clasping and triquetrous, keeled, and adpressed. According to Loudon, some uncertainty is attached to this species. Mention is made of it in Lambert's "Pines" and in Staunton's "Embassy," and it is the *fimoro* of Kämpfer. In



Spreading Cypress (Cupressus horizontalis).

the United States, the cypress is represented in the white cedar. **II.** The deciduous cypress (*taxodium distichum*, Richard) is a stately tree of the pine family, much admired for its foliage of a most delicate light green, which falls in autumn after turning to a bright tawny color. Its leaves are linear and spreading, awl-shaped, and imbricated on the branches which produce the flowers; its seed vessels or strobiles are small, subglobose, and formed of angular woody scales. This lofty tree is a native of the middle and southern states of North America, extending from Delaware to the extreme south. Its trunk is very thick, often from 25 to 40 ft. in circumference at the base, and attaining to 120 ft. in height. The branchlets are very slender, elegantly pinnate; the leaves pectinate and distichous, spreading horizontally from being twisted at the base, linear, mucronulate, flat, one-nerved, glabrous on both sides, light green, margins acute, exterior somewhat convex, half an inch or more in length, and about a line broad. The tree, as it grows old, according to Michaux, has a spreading, broad head; but it assumes a great variety of forms, when raised artificially from the seeds. Loudon, in his *Arboretum Britannicum*, enumerates four principal forms, viz.: 1, the species having the branches horizontal, or somewhat inclined upward; 2, with the branches pendulous; 3, with the branches horizontal, and the young shoots of the year pendulous, the leaves being twisted and compressed around them in the early part of the season, but fully expanded, like those of the species, toward autumn; 4, with the leaves on the young shoots tortuous, and the branches pendulous. It is in the southern states, particularly in Florida, that the deciduous cypress attains its largest size, when it grows in the deep, miry soil of the swamps. The base of its trunk is usually hollow for three fourths of its bulk, and its surface is longitudinally furrowed with deep tortuous channels. The roots of the large trees, particularly in situations exposed to inundations, have strange-looking conical protuberances, called cypress knees, which rise above the soil about 2 ft. in height, and sometimes from 4 to 5 ft. in thickness; these are hollow, smooth, and covered with a reddish bark like the roots, which they resemble also in the softness of the wood. The wood of the trunk is esteemed for timber, and being imperishable under water, is largely used for foundations of buildings and for piles in wet localities. It is also invaluable for carpentry, being straight grained, soft, and easily worked. In the swamps of the south and of New Jersey immense numbers of fallen cypress trunks are found at considerable depths, and in sound condition notwithstanding the great length of time that they must have been submerged.



Deciduous Cypress (Taxodium distichum).

CYPRIAN, Thascius Cæcilius, a Christian saint, bishop, and martyr, born at Carthage, died Sept. 14, 258. To his proper name of Thascius Cyprianus he added Cæcilius, in gratitude to a Carthaginian priest of that name who had been instrumental in his conversion. His authen-

tic history begins with his baptism about 246. He appears to have come of a senatorial family, and to have been a lawyer and a successful teacher of rhetoric. He gave his large fortune to the poor, retired from public life, and devoted himself wholly to the study of the Scriptures and of Christian writers. From his solitude he published a letter on the "Contempt of the World," and a treatise on the "Vanity of Idols." He was soon after raised to the priesthood, and on the death of his friend Donatus, bishop of Carthage, the people and clergy of that city gave him their united suffrages. Although the episcopal office had been forced upon him, he set about discharging its duties with zeal. The see of Carthage enjoyed metropolitan rank, while the lustre lent to Cyprian by his former social position, his learning, eloquence, and generosity, gave him more than ordinary influence over the bishops of northern Africa. The persecution of Decius broke out in 250, and placed before Cyprian the alternative of laying down his life for his faith, or concealing himself while the storm lasted. He chose the latter course, and thereby laid himself open to the charge of cowardice afterward made by his enemies. In his concealment, however, he did not neglect his duties. The persecution was severe in Carthage and throughout its dependent province; numbers of Christians apostatized or exhibited deplorable weakness. The former were called "fallen," the latter *libellatici*, because they had accepted from the magistrates *libelli* or certificates attesting that they had obeyed the imperial decrees, although they had not sacrificed to the idols. The persecution over, both classes sought to be reconciled with the church. To escape the canonical penalties, they had recourse to such as had suffered gloriously for the faith, and obtained from them *libelli pacis*, or recommendations to mercy. Cyprian's disposition would not allow him to admit the fallen without full atonement, and a troublesome controversy arose. As the difficulty existed in every diocese in the province, he called a council at Carthage. The assembled bishops decided that the libellatici should be immediately admitted to communion, as they had not offered sacrifice, while all who had should undergo the usual course of public penance. At the same time they excommunicated Simplicissimus, who had taken advantage of the persecution and of Cyprian's absence from Carthage to organize a separate church which admitted the apostates without atonement. The acts of this council were submitted to Cornelius, bishop of Rome, who called a council of 60 bishops, which adopted the disciplinary rules laid down by the African bishops. At Rome also Donatus, who had set up a rival church, and Novatian, who refused absolutely to admit those who had fallen into apostasy, were excommunicated by Cornelius. Novatus, one of the five priests opposed to Cyprian, had fled to Rome after the council of Carthage, and there, although so lax in his opinions, he joined hands with Novatian, who belonged to the opposite extreme of Montanistic rigor. Fortunatus, who had been set up as bishop in Carthage in opposition to Cyprian, went also to Rome with the hope of having his nomination approved, and succeeded in deceiving Cornelius. A sharp correspondence ensued; but the misunderstanding was of short duration, and the schismatic party in Carthage died out in silence. A second council met in that city and confirmed all that had been decided in the former, while throughout the province the interests of Christianity seemed to prosper wonderfully. Just then a fearful plague broke out, and the bishop of Carthage, amid the universal dismay, exerted himself for the relief of the sufferers. Some of the pagans bore witness to his deeds of charity even in their behalf. Others among them could only see in the plague a visitation of the angry gods; and already the ominous cry had been heard during the public games, "Cyprian to the lions!" Besides these annoyances, and the constantly recurring doctrinal disputes which the metropolitan of Carthage was called on to decide, at this period came up the question of the validity of baptism given by heretics. Cyprian, with many of his African bishops and several Asiatic churches, held it invalid, and that all who had received it should be baptized anew. This opinion, ratified by two different synods in Africa, was rejected at Rome. Stephen, the second successor of Cornelius, did not quite understand Cyprian, who appears to have urged rebaptism as a matter of discipline, and not as a point of dogmatic necessity. The ardent Carthaginian, whose messengers had been coldly received by the pope, now assembled a council representing all the African churches. They reaffirmed the lawfulness of their own condemned custom, and the controversy continued until a plenary council at length decided against rebaptizing. Meanwhile, in 257, the emperor Valerian issued his decree of persecution. On Aug. 30 Cyprian was summoned to the presence of the proconsul, and commanded to sacrifice to the gods. "I am a Christian," was the bishop's reply. Asked to declare the number and abodes of his priests, he peremptorily refused, and for his contumacy was banished to Curubis, on the seacoast, 50 miles from Carthage. A second and more severe edict from Rome soon drove him from his place of banishment to face a greater peril. A guard had been sent to conduct him to Utica, where the emperor then was; but Cyprian, wishing to die in the midst of his flock, concealed himself for a time. He soon, however, showed himself in public, and waited for the coming of the soldiers. Arrested Sept. 13, 258, he was conducted under escort to Sexti, in the neighborhood of the city, where on the 14th he appeared before the proconsul, again refused to burn incense before the idols, and was condemned to be beheaded. "God

be praised," was his only reply. When led to execution, he laid aside his upper garments, bestowed 50 pieces of gold upon the headsman, and calmly surrendered himself to the death stroke. The weeping crowd who witnessed his beheading steeped kerchiefs and napkins in his blood. His body was interred on the Mappalian way, where a church long marked the spot. When the Saracens invaded northern Africa, his remains were carefully guarded, and brought over to France in the reign of Charlemagne.—The works of Cyprian have passed through many editions since the invention of printing. Fell's Oxford edition appeared in 1682; another in Holland in 1700, with the notes of Pearson and Dodwell. The standard edition is that of Paris (fol., 1726), with the notes of Baluze, and a life by the Benedictine Dom Maran. The best lives of Cyprian are those of Gervaise (4to, 1717), Rettberg (8vo, Göttingen, 1831), Poole (8vo, London, 1840), Collombet (Paris, 1843), and Böhringer (8vo, Zürich, 1842).

CYPRUS (Gr. Κύπρος; Turk. *Kybris*), a Turkish island, the most eastern of the Mediterranean, lying between lat. 34° 29′ 18″ and 35° 41′ 42″ N., and lon. 32° 17′ and 34° 35′ 30″ E. From Cape St. Andrea, its extreme eastern point, to the nearest point of the coast of Syria, is about 65 m., and to Latakia about 68 m.; on the north it approaches within about 44 m. of the coast of Asia Minor. Length about 140 m.; breadth for nearly 100 m. W. to E. about 40 m., thence to the N. E. extremity about 15 m.; area, 3,678 sq. m.; pop. (which under the Venetians amounted to 1,000,000) estimated at about 200,000, of whom two thirds are Greeks, and the rest Moslems, Maronites, Armenians, Roman Catholics, and Jews. It is intersected from E. to W. by a range of mountains, called Olympus by the ancients, whose principal peak, Oros Stavros, is 6,595 ft. in height. It often suffers from drought, its largest stream, the Pedia (the Pediæus of the ancients), being sometimes entirely dry. The inhabitants must then depend mostly upon cisterns, as the wells are nearly all brackish. Aromatic herbs of all kinds grow spontaneously. Cotton, wine, tobacco, silk, and fruits, all of fine quality, are produced. Several dyewoods and drugs also grow on the island. The minerals are numerous, including the precious metals and copper, and many precious stones, but the mines are neglected. The wines of Cyprus, especially those from the vineyard called the Commanderia, from having belonged to the knights of Malta, enjoyed great celebrity in former times, and the production exceeded 2,000,000 gallons, but has now dwindled down to less than 200,000. Two common qualities of Cyprus wines, black and red, with a strong taste of tar from being kept in tarred casks, are exported to Egypt, but never to Europe. Larnaka, where the European consuls and the principal foreign merchants reside, and Limasol (anc. *Amathus*) are the chief commercial emporiums of the island. Famagusta (on the site of ancient Arsinoë), so famous under the Venetians, possesses an excellent spacious port, sheltered from all winds, which could easily be deepened to accommodate hundreds of large ships; but at present it is so choked up with filth that it can only hold about a dozen small craft. Locusts commit great ravages in the island, but in spite of this evil, and of the abuses in assessing and collecting the taxes, the prosperity of Cyprus is on the whole increasing. Many of the oppressions have been removed; the peasants are freely permitted to sell their produce, and agricultural employment is abundant. The wheat and oats are inferior, and the annual grain crop is small. Colocynth is extensively cultivated. The cotton crop in 1857 amounted to about 2,700 bales. During the American civil war it reached over 8,000 bales, but has since fallen off. Madder root forms a principal production, the greater part being exported to France, and the rest retained for home consumption. The abolition in 1835 of the monopoly on carob beans (*ceratonia siliqua*) rapidly increased their production. In 1852 the exports of carobs amounted to 1,350 tons, and in 1857 cargoes were for the first time exported to England. In 1864 the exports of them amounted to 7,087 tons, valued at about $175,000, and they have since increased. British and American manufactures are imported from Syria, Smyrna, and Constantinople; hides, coffee, sugar, cloth, fowling pieces, fine powder, small shot, salt fish, and Swedish iron, from France; glass, steel, German iron, nails, paper, &c., from Trieste and other Austrian ports. The island forms a part of the vilayet of the islands of the Mediterranean (Jezairi Bahri Sefid). Capital, Nicosia (Turk. Lefkosha). The archbishop of Cyprus resides at Nicosia, but his title is metropolitan of Constantia (Famagusta). By the council of Ephesus, in 431, his independence of any patriarch was declared, and he still retains it. Thus the church of Cyprus, which has, besides the metropolitan, five suffragan bishoprics, is considered one of the independent groups into which the Greek church is divided. For the Catholics of the Latin communion, who do not exceed 1,000, there is a bishop at Famagusta; and there is also a Maronite bishopric of Cyprus.—The island of Cyprus occupies a distinguished place both in sacred and profane history. It early belonged to the Phœnicians of the neighboring coast. It was afterward colonized by Greeks, who founded there several independent kingdoms, and passed successively under the power of the Pharaohs, Persians, Ptolemies, and Romans, excepting a short period of independence under Evagoras, in the 4th century B. C. It was one of the chief seats of the worship of Venus, hence called Cypria. Salamis, Citium (whence the Biblical name of the island, Kittim), Amathus, Paphos, Soli, &c., were the most remarkable ancient

cities. At the time of the crusades it was detached from the Greek empire, and made a kingdom for Guy of Lusignan. From his descendants it fell to the Venetians, and in 1570–'71 was subdued by the Turks after a brave defence. From 1832 to 1840 it was governed by the viceroy of Egypt. Recently the interest of the public in the history and antiquities of Cyprus has been excited by the discoveries made by Gen. Cesnola, the American consul at that island. (See CESNOLA.) The decipherment of the Cypriote inscriptions was attempted by De Luynes and Röth on a supposed identification of the words Salamis and Amathus. The recent discovery by Lang of a bilingual inscription in Phœnician and Cypriote proved it to be a wrong basis. The labors of Hesychius, Birch, George Smith, and of Brandis, whose discoveries were published in 1873 by Curtius, have shown that the language of the Cypriote inscriptions is a Greek dialect, approaching the Arcadian, but possessing many peculiarities. The writing, which is not Greek, but of unknown origin, is usually from right to left and syllabic. Some of the characters represent, however, different forms of the vowels, and others consonants only.

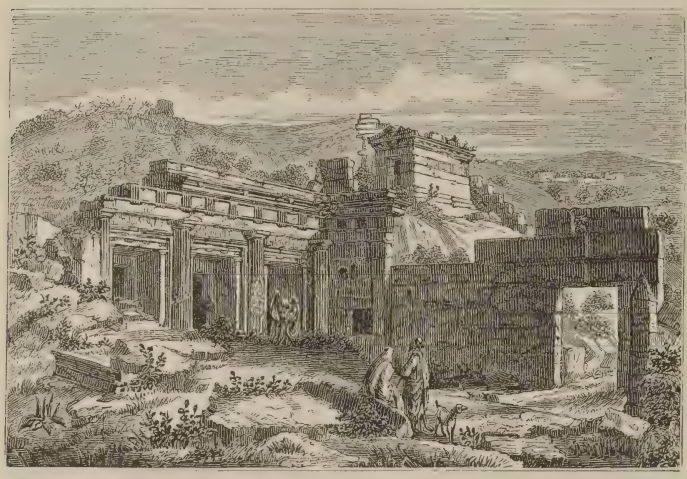
CYPSELUS, a tyrant of Corinth, son of Æëtion. His mother was one of the Bacchiadæ, but so ill-favored that none of her own order would accept her in marriage, whereon she wedded Æëtion. The Delphian pythoness having foretold that her child would prove formidable to the aristocratic party, the Bacchiadæ attempted to murder him; but his mother concealed him in a chest (Gr. *κυψέλη*). Cypselus overthrew the power of the oligarchs, expelled them from the city, and reigned 30 years (655–625 B. C.). Aristotle represents his rule as mild and popular, but according to Herodotus he was a cruel oppressor. He was succeeded by his son Periander.

CYRENAICA, or **Cyrenæa,** an ancient country of Africa, in the N. E. part of modern Tripoli, bounded N. by the Mediterranean, E. by Marmarica, S. by the desert, and W. by the Greater Syrtis, now the gulf of Sidra. In its widest limits it included Marmarica on the east, and extended to the Aræ Philænorum on the west, and thus corresponded with modern Barca. The centre is a moderately elevated table land, sloping gradually and in terraces down to the hilly coast land, which, from its position, climate, and soil, is one of the most delightful regions of the earth. It abounds in excellent fruits, vegetables, flowers, and rare plants. Cyrenaica was one of the most flourishing colonies of the Greeks, having been settled by Dorians from the island of Thera. Battus, the leader of the original colony, founded Cyrene in 631 B. C., and a dynasty which numbered four kings of his name and four named Arcesilaus. Battus IV. was killed about 450, and a republic was established, soon replaced by a new tyranny. When Alexander the Great invaded Egypt, the Cyrenæans were his allies. After his death the first of the Ptolemies annexed their country to Egypt, and his successors possessed it till about 96 B. C., when Apion, the last governor, an illegitimate son of Ptolemy Physcon, made it over to the Romans. Under the Ptolemies the country was also known as Pentapolis, from the five principal cities: Cyrene; Apollonia, the port town of the preceding; Ptolemais, on the site of the port of Barca, now Tolmeta; Arsinoë, more anciently Tauchira, now Taukra; and Berenice, more anciently Hesperides, now Benghazi, at the mouth of the Lathon. The Romans, who first proclaimed the freedom of the country, soon annexed it as a province, together with Crete, under the name of Cyrenaica. Under Constantine the Great it became a separate province, and was called Upper Libya. Bloody struggles with the revolted Jewish inhabitants under Trajan, repeated incursions of the nomadic tribes of the interior, earthquakes and locusts, gradually destroyed the wealth of the province; its invasion by the Persians, and soon after by the Saracens, in the 7th century, completed its ruin. Cyrenaica was the chief seat of the disciples of Aristippus, and in a later period of the African Gnostics. The whole region abounds in remnants of antiquity.—See Della Cella, *Viaggio da Tripoli alle frontieri occidentali dell' Egitto* (Genoa, 1819); Pacho, *Voyage dans la Marmarique, la Cyrénaïque,* &c. (Paris, 1825–'9); Beechey, "Proceedings of the Expedition to Explore the Northern Coast of Africa" (London, 1828); Trighe, *Res Cyrenensium* (Copenhagen, 1828); Hamilton, "Wanderings in North Africa;" and Rawlinson's notes to Herodotus, book iv.

CYRENAICS, a school of philosophers founded by Aristippus of Cyrenaica, a pupil of Socrates, about 380 B. C., who taught that enjoyment was the highest object, and that virtue consisted in the art of producing the highest possible amount of agreeable feelings, by living in moderate activity, in the enjoyment of art and literature, with the careful shunning of pain. They despised, like the Cynics, all speculative philosophy, but as a rule were not immoral, limiting their practice to a gay, moderate, and amiable enjoyment of life. Among these philosophers, Arete, the daughter of Aristippus, his grandson Aristippus Metrodidactus, and Hegesias were the most renowned. This school was succeeded, a century later, by the kindred philosophy of Epicurus.

CYRENE, the chief city of Cyrenaica, founded in 631 B. C. by Theræans under Battus, around a fountain the native name of which was Cyre (*Κύρη*), consecrated to Apollo, which supplied the city with water. It was built on a high terrace of the Cyrenæan table land, about 9 m. from the coast at Apollonia, which became its port. The road which connected the city with the harbor, a vast necropolis, and ruins of streets, temples, theatres, tombs, and remnants of art, are still visible, the site of the ancient city having been identified with the modern

Grennah. In the time of Herodotus Cyrene covered an area equal to the entire neighboring island of Platea (now Bomba). Aristippus, the founder of the Cyrenaic school of philosophy, Carneades, the founder of the New Academy, the poet Callimachus, the astronomer Eratosthenes, and the eloquent bishop Synesius (in the 5th century) were natives of Cyrene.



Rock-cut Temple, Cyrene.

CYRIL OF ALEXANDRIA, a Christian saint, patriarch, and doctor, born in Alexandria about 376, died there in 444. The patriarch Theophilus, his uncle, had him educated under the abbot Serapion in one of the numerous monasteries which then flourished around the Natron lakes (Nitriæ), in the delta of the Nile. At the end of his course of studies he was ordained priest and appointed preacher in the cathedral, where his discourses gained him great popularity. In 403 he accompanied Theophilus to the famous "synod of the oak" in Chalcedon, which sentenced St. John Chrysostom to deposition and banishment. This involved both himself and Theophilus in the excommunication pronounced by the pope on the persecutors of Chrysostom. Theophilus died Oct. 15, 412; and three days later, after a violent contest, Cyril was elected bishop of Alexandria. He commenced his official career by silencing the Novatians, whose churches he closed. According to the historian Socrates, who is accused of being favorable to the Novatians, and others, this step was followed by the forcible expulsion of the Jews, numbering 40,000, from Alexandria, and by a bitter quarrel between the patriarch and Orestes, prefect of Egypt. The prefect denounced the act of Cyril as a usurpation of the civil authority, alike opposed to law and good policy; but Cyril managed to explain his conduct to the satisfaction of the emperor. As Orestes repelled every advance toward a reconciliation, the popular excitement increased, the opinion having gone abroad that the prefect opposed the bishop while he favored Jews, heretics, and pagans. Thereupon 500 monks from the Natron lakes, having flocked into Alexandria to the bishop's support, met the prefect in the streets, attacked and dispersed his escort, and demolished his chariot, while their leader, Ammonius, wounded Orestes in the face. The arrest, sentence, and execution of Ammonius only brought the mischief to a crisis. Orestes, as well as the celebrated Synesius, bishop of Cyrene, was wont to attend the lessons of Hypatia. The rumor having spread that this accomplished woman, who was a pagan, was the chief instigator of the prefect's opposition, she was waylaid on her return from the schools, dragged from her chariot, borne off to a neighboring church, and murdered. In 420 Atticus, bishop of Antioch, wrote to Cyril, urging him to do justice to the memory of Chrysostom by replacing his name on the dyptichs. Cyril's reply is full of unrelenting animosity; but in 421 he yielded the point, and thus at length became reconciled with the church of Rome. In the stormy controversy about the Nestorian heresy, commenced in 428, Cyril bore such a prominent part on the orthodox side that he is still called in the schools "the doctor of the Incarnation." The fact of Nestorius having been a monk in Antioch, and his great reputation for ascetic virtue, obtained many adherents to his doctrine even in the monasteries of Egypt. Cyril took the alarm, warned both the monks and his people against the new doctrine, and wrote to Nestorius himself, who made a haughty reply. In February, 430, Cyril convened a synod in Alexandria, in which a formal expostulation was drawn up, and sent with a synodal letter to Nestorius. This proving of no avail, a second synod assembled in June, in which an exposition of the Nestorian doctrines was drawn up and sent to Rome. This appeal to the pope produced intense irritation in Constantinople, which was increased by letters, or rather doctrinal treatises, addressed by Cyril to the emperor, to his sister Pulcheria, and to the chief personages of the empire. The church of Antioch and the whole of Syria took up the cause of Nestorius, thinking that Cyril and the bishops of his province leaned to the heresy of the Apollinarists; and so this misunderstanding was complicated by national animosities. Pope Celestine I., in August, 430, condemned in council the doctrine of Nestorius, and gave Cyril

full power to demand a retraction from him, and to name his successor in case he should prove refractory. On receipt of the pope's decision, Cyril called his suffragans together in the following November, and framed his "twelve anathematisms," embodying the twelve most obnoxious propositions from the writings of Nestorius. These, with the pope's letter and sentence, were borne to Constantinople by a deputation of bishops, and only drew from Nestorius twelve counter-anathemas. John of Antioch and the bishops of Syria wrote to Nestorius, advising him to yield to the pope's decree and retract; but he was deaf to their prayers and those of the emperor. The only remedy was now thought to be a general council, which assembled in Ephesus in June, 431, and after vainly summoning Nestorius to appear, condemned his doctrine by the adoption of Cyril's "anathematisms," and sentenced him to be deposed. Shortly after John of Antioch arrived, and at the head of 30 bishops held a second council, which condemned as illegal the proceedings of the 200 bishops under Cyril, excommunicated them all, and sentenced the patriarch of Alexandria and the bishop of Ephesus to be deposed. The emperor, misinformed about the respective numbers and acts of the two bodies, caused Nestorius, Cyril, and Memnon of Ephesus to be imprisoned, in hope of thus obtaining peace. Soon after, however, the sentence against Nestorius was carried into effect, and Cyril and Memnon were set at liberty. Cyril returned to Alexandria, where for the next few years he labored to perfect the pacification of the church, which, commenced at Ephesus, was consummated in the first months of 433, by the submission of John of Antioch and the Syrian bishops. This fact Cyril announced to his people, April 23 of that year. His feast is celebrated by the Greeks on Jan. 18, and by the Latins on Jan. 28.—The best edition of Cyril's works, exegetical, doctrinal, and controversial, is that by Jean Aubert (7 vols. folio, Paris, 1638), reprinted by Migne in his *Patrologie grecque* (vols. lxviii. to lxxvii., Paris, 1857–'66). Besides this, there is the Cologne folio (2 vols., 1546), and another Paris edition (2 vols. fol., 1692), containing the Greek text with notes.

CYRIL OF JERUSALEM, a saint and doctor of the church, born at or near Jerusalem about A. D. 315, died in 386. He was ordained priest by Maximus, bishop of Jerusalem, and was intrusted with the charge of the catechumens, and sometimes with the duty of preaching in the place of the bishop. When, in 350, the see of Jerusalem became vacant, Cyril was promoted to it, and consecrated by Acacius of Cæsarea, the metropolitan of Palestine. Acacius was an Arian, and it has been affirmed that Cyril, in keeping fellowship with him and the Arian party, while professing orthodox sentiments, was guilty of duplicity. But he was never considered Arian by the Arians themselves, or as in any way favorable to that party in the matter of theology, although in his banishment and misfortune he accepted the hospitality of friends who were semi-Arian. Acacius was for many years his bitter enemy and persecutor, and in 358 procured a sentence of deposition against him. Cyril was accused of having sold the furniture and ornaments of his church, gifts of the emperor Constantine; but his plea was that he did this in time of famine to save the poor from starving. The sentence, palpably unjust, was reversed at the council of Seleucia in 359, but was repronounced the next year, with an additional imperial decree of banishment. On the accession of Julian in 361, Cyril was enabled to return to Jerusalem. But the favor of the tolerant pagan did not prevent the Christian zeal of the bishop, who condemned, on grounds of Scripture and prophecy, the emperor's attempt to rebuild in the holy city the Jewish temple. The emperor Valens in 367, repealing Julian's act of amnesty, again sent Cyril into exile, and only after 11 years was he able to regain his seat and to stay unmolested. He had the satisfaction in his last years of seeing the orthodox faith fully established, and of taking part in the council of Constantinople, which decreed the condemnation of the Arian, semi-Arian, and Macedonian heretics.—The writings of Cyril which remain are: a course of 23 "Catechetical Lectures;" a single sermon, suggested by the Scripture narrative of the healing of the paralytic, and treating sin as the origin of all misery and suffering; and a letter to the emperor Constantius relating the prodigy of the luminous cross at Jerusalem. His works have been frequently printed both in Greek and in Latin. The editions of Cologne (1564) and Paris (1589) are in a single octavo volume. The fine edition of the Benedictine Touttée (folio, Paris, 1720) is in both languages. A French translation of the "Catechetical Lectures," with notes and commentaries, was made by Grandcolas. An English translation of the same work, very faithful and spirited, edited by John Henry Newman, was published in Oxford in 1838.

CYRIL and METHODIUS, supposed to have been brothers, apostles of the Slavs, of whom the former, born in Thessalonica about 820, died in Rome, Feb. 14, 869; the dates of the birth and death of the latter are unknown. The former received in baptism the name of Constantine, by which he was known until he embraced the monastic profession, or, as others think, until he was consecrated bishop in Rome, when he assumed the name of Cyril. His father, who was of senatorial rank, sent him to be educated in Constantinople, where his knowledge of languages and his varied erudition gained him the surname of Philosophos (the learned) and the custody of the public library. He had become a monk and received priest's orders when Methodius, who had attained the rank of general in the imperial army, entered the same monastery. In 848 the empress regent Theo-

dora received a deputation from the Khazars, who held the Crimea and neighboring countries, and asked for missionaries to instruct them in the Christian religion. Cyril was chosen by the empress for this mission. He spent some time in the Crimea, to acquire familiarity with the Slavic tongue, succeeded in bringing to the Christian faith the khan of the Khazars, and returned to Constantinople, leaving several priests to continue the good work. Radislas, prince of the Moravians, having heard of the success of Cyril among the Khazars, also sent to Theodora asking for missionaries. This time she sent both the brothers, providing them with all that was necessary for their journey. This missionary enterprise also embraced Bulgaria, Serbia, and Pannonia. They brought with them a translation of the Gospels into Slavic (old or church Slavic), and, it is said, the relics of St. Clement (Clemens Romanus), discovered in the Crimea. The Moravians received the missionaries with great joy, and the work of instruction went on rapidly, Cyril having adapted the Greek and Roman alphabets to the Slavic idioms. As the beginning of Christianity in Moravia had been due to priests sent from Germany, the metropolitan of Salzburg and his suffragans took offence at the success of the Greeks, and at the use of the vulgar tongue in the celebration of mass. They complained to the pope, and Nicholas I. summoned the brothers to answer these charges. On their arrival in Rome Adrian II., who had meanwhile succeeded Nicholas, received the missionaries with great favor, heard their story, approved all they had done, and raised them both to the episcopal dignity, appointing Methodius metropolitan of Moravia, but assigning no particular see to Cyril. In the winter of 868 Cyril, when about to return to the field of his labors, sickened and died in one of the monasteries of Rome. Methodius was doomed on his return to witness a sad change. Radislas in 870 was defeated by Louis of Germany, and shut up in a monastery after having had his eyes put out. Swatopluk, who took his place, showed himself at first a tyrant and an enemy of Christianity. Methodius, finding expostulation unavailing, excommunicated the prince, and was expelled from Moravia. Swatopluk repented some time afterward, sent to the exiled archbishop soliciting his return, and promised to repair the evils he had caused. Methodius was again accused at Rome by a synodal letter signed by the archbishop of Salzburg and his suffragans, and John VIII. wrote to Swatopluk asking that Methodius should once more proceed to Rome. This second journey, in 880, procured him only a still more honorable reception from the pope, a renewed approbation of his conduct in the establishment of the Slavic liturgy, and a confirmation of his prerogatives as metropolitan. Duke Borzivoy of Bohemia, having come to visit Swatopluk, his suzerain, was treated with indignity because he was not a Christian. The kind words of Methodius soothed him, and his instructions soon enlightened him. He embraced Christianity, converted his wife, and engaged Methodius to assist in converting his people. This change did not happen without a civil war in which the Christians were finally victorious, and Borzivoy was left free to carry out his intentions peacefully. The churches of St. Peter and St. Paul and of Our Lady in Prague are said to have been founded by him. Methodius is supposed to have made a third pilgrimage to Rome, and died there.—The 1000th anniversary of the foundation of the Slavic churches was celebrated in 1864 both in Bohemia and Moravia. An edition of Cyril's version of the Scriptures was printed at Ostrog in 1581, under the auspices of the palatine of Volhynia; it is in the so-called Cyrillic character. There is also a *Glossarium Cyrilli* in the work entitled *Vetus Lexicon Græco-Latinum, cum Notis Vulcanii* (fol., Leyden, 1600). Among the biographers of these saints are Stredowski, who has a life of Cyril and Methodius in his *Sacra Moraviæ Historia* (4to, Sulzbach, 1710), and Philaret, bishop of Riga (German translation, 1847). See for particulars Rohrbacher's "Church History," vol. viii., and Wattenbach, *Beiträge zur Geschichte der christlichen Kirche in Mähren und Böhmen* (Vienna, 1849).

CYRUS, a river of Asia. See KUR.

CYRUS. I. The Elder, the Koresh of the Hebrew Scriptures (supposed to be from the Persian *kohr*, the sun), the founder of the Persian empire, reigned from about 558 to 529 B. C. He was grandson of Astyages, king of Media. Most of the particulars of his life are differently related in the histories of Ctesias and Herodotus, and in the Cyropædia of Xenophon. But as Ctesias is in general untrustworthy, and as Xenophon seems to have written his book, a kind of philosophical romance, without much regard for history, the story of Herodotus, in spite of its legendary character, has been generally adopted by modern historians down to Grote. According to this narrative, Cyrus was the son of Cambyses, a Persian noble, and of Mandane, the daughter of Astyages. This king commanded him to be put to death immediately after his birth, in consequence of dreams which were explained by the magi as presages of the future royal greatness of the child. Saved by the humanity of Harpagus, an officer of the court, and of a herdsman, who was to expose him to death in the wilderness, he was brought up by the latter as his son in a secluded mountain region, where he soon became the leader of his playfellows, who chose him as their king. Having in this capacity ordered the son of a distinguished Median to be scourged for disobedience, he was brought before Astyages, to whom his bold answers and his features soon betrayed his origin. The herdsman was pardoned, Harpagus cruelly punished in the person of his son, and Cyrus, whom the magi declared to have already attained the threatening

greatness predicted by the dreams, was sent to Persia to his parents. When he grew up, following the secret advice of Harpagus, he prepared to dethrone his grandfather. The hardy and warlike Persians were easily induced to shake off the yoke of Media. Harpagus betrayed the first army, sent under his command against the rebels; and with a second the king himself was defeated near Pasargadæ, and made prisoner. Cyrus was acknowledged by the Medes as ruler of the new empire of Persia and Media, of which they became the second nation. He now marched against Crœsus, king of Lydia, who crossed the Halys to revenge his fallen ally and brother-in-law Astyages. A bloody but indecisive battle was fought in Cappadocia. Crœsus thought it wiser to return to his own country, hoping to recommence the campaign with reënforcements from his allies, the kings of Egypt and Babylonia, and the Lacedæmonians. But before these arrived Cyrus had in his turn crossed the Halys, vanquished the celebrated Lydian cavalry on the plain before Sardis, taken that city, and made Crœsus prisoner. The Greeks of Asia Minor, who had rejected the previous invitations of Cyrus to revolt against the Lydians, were now conquered by an army under Harpagus. A part of the Phocæans, however, preferred emigration to the distant regions of the west. The Carians, Caunians, Lycians, and others were next subdued by the same general, while Cyrus himself was preparing and partly executing his more important eastern conquests. For the reduction of Babylonia, the second great empire of western Asia, by Cyrus, we have the concurring testimony of the three above mentioned Greek historians, as well as of the Scriptures, though according to Xenophon he acted only as general of his uncle Cyaxares II., son of Astyages, king of Media. Herodotus describes how, on his march from the northeast against Babylon, Cyrus chastised the river Gyndes, an affluent of the Tigris, for drowning one of his sacred white horses, by digging 360 channels, "so that women in future should cross it without wetting their knees;" how he turned the Euphrates by a canal into the artificial lake made by the Babylonian queen Nitocris, "on which the river sank to such an extent, that the natural bed of the stream became fordable;" how through this bed the Persians entered the city and took it by surprise; and how, "owing to the vast size of the place, the inhabitants of the central parts (as the residents at Babylon declare), long after the outer portions of the town were taken, knew nothing of what had chanced, but, as they were engaged in a festival, continued dancing and revelling until they learned the capture but too certainly." Confirming these statements, the Hebrews dwell on the exploits of their deliverer from the Babylonish captivity; on the "one from the north" and "from the rising of the sun," who comes "upon princes as upon mortar, and as the potter treadeth clay;" who executes "on Babylon the vengeance of the Lord;" "that saith to the deep, Be dry, and I will dry up thy rivers; that saith of Cyrus, He is my shepherd and shall perform all my pleasure; even saying to Jerusalem, Thou shalt be built; and to the temple, Thy foundation shall be laid" (Isaiah). They relate how "the mighty men of Babylon have forborne to fight, they have remained in their holds, their might hath failed; they became as women;" how one post runs "to meet another, and one messenger to meet another, to show the king of Babylon that his city is taken at one end" (Jeremiah). After the fall of the capital (538), which seems to have been greeted by many oppressed nations of Asia as the commencement of an era of justice and freedom, all the provinces of the Babylonian empire speedily surrendered to the conqueror, who was now master of nearly all the countries between the Indus and the Ægean, the Oxus and the Red sea. Satisfied with this vast dominion, which he ruled wisely and justly, Xenophon makes him die in peace and in his bed with a Socratic speech on his lips; but Arrian attributes to him afterward an invasion of India across the desert of Arachosia; Ctesias, an expedition against the Derbices, a people in the Caucasian regions, in which he is slain; and Herodotus, an attack upon the Massagetæ, northern nomads ruled by a queen, Tomyris, and greatly resembling the Scythians, in whose country he was defeated and slain in a bloody battle. There is, however, some testimony that he was buried in Pasargadæ in his native province, "where his tomb was honored and watched until the breaking up of the empire, while his memory was held in profound veneration among the Persians." "There is much reason to believe," says Rawlinson, "that the tomb of Cyrus still exists at Murgab, the ancient Pasargadæ. On a square base, composed of immense blocks of white marble, rising in steps, stands a structure so closely resembling the description of Arrian, that it seems scarcely possible to doubt that it is the tomb which in Alexander's time contained the body of Cyrus. It is a quadrangular edifice or chamber, built of blocks 5 ft. thick, which are shaped at the top into a sloping roof. Internally the chamber is 10 ft. long, 7 wide, and 8 high. There are holes in the marble floor, which seem to have admitted the fastenings of a sarcophagus. The tomb stands in an area marked out by pillars, where occurs repeatedly the inscription (written both in Persian and the so-called Median), 'I am Cyrus the king, the Achæmenian.' It is called by the natives the tomb of the mother of Solomon." **II. The Younger,** second son of Darius Nothus, king of Persia, received from his father at an early age the satrapy of Lydia, Phrygia, and other parts of Asia Minor (407 B. C.). When his elder brother, Artaxerxes II., ascended the throne,

he formed a plot against his life, which was discovered by Tissaphernes, and pardoned on the intercession of Parysatis, widow of Darius. Reinstated in his satrapy, Cyrus collected a powerful army, including 13,000 Greek mercenaries (one of whom was Xenophon, their leader in the subsequent retreat), and marched from Sardis in the spring of 401 toward Babylonia, with the secret purpose of dethroning his brother. Having crossed the Euphrates at Thapsacus, he met the king at the head of an immense army, near Cunaxa. The battle was nearly won, especially by the valor of the Greeks on the right wing, when, perceiving Artaxerxes in the centre, the ambitious prince furiously rushed to assail him, and fell pierced by a javelin, after having wounded his brother. The character and accomplishments of this prince are described by Xenophon, in the first book of the Anabasis.

CYTHERA. See CERIGO.

CYZICUS, one of the oldest and most powerful of the Greek cities of Asia, situated on a small island in the Propontis, near the Mysian shore, said to have been founded by a Pelasgic tribe, expelled from their homes by the Æolians. It was afterward subject alternately to Athens, Sparta, and Persia, and obtained its independence after the time of Alexander. In the wars which determined the fate of the kingdom of Syria it took part with Pergamus and the Romans against Antiochus. The heroism with which the Cyzicenes defended their city when it was besieged by Mithridates obtained for it the rank of a *libera civitas.* When Constantine created the new province of Hellespontus, he made Cyzicus the capital. It was partially destroyed by an earthquake in A. D. 443, and was captured and completely ruined by the Arabians in 675. The place is now overgrown with neglected orchards and vineyards, and a low sandy isthmus has been formed converting the island into a peninsula.

CZAJKOWSKI, Michal, a Polish novelist, born in the Ukraine in 1808. After the Polish revolution of 1830 he betook himself to Paris, and in 1840 was sent by a portion of the Polish emigration on a mission to Turkey, where he became a Mohammedan under the name of Mohammed Sadik Effendi. On the outbreak of the Crimean war, he organized and with the title of pasha commanded a body of troops called the Cossacks of the sultan, and after the retreat of the Russians from the Danubian principalities was made military governor of Bucharest. He remained in Turkish service after the war, until, his son having in 1872 obtained permission to settle in Russia, he was soon after allowed by Alexander II. to return to his native country. His novels, which treat chiefly of Cossack and Ukrainian life, and of which *Wernyhora* is the most esteemed, have been translated into several languages.

CZAR, or **Tzar,** a title of the sovereigns of Russia, meaning king or lord. It has been supposed to be a corruption of the Latin Cæsar, in the sense of the German *Kaiser*, but the ancient Slavic translation of the Bible has *kesar* for *καῖσαρ*, and *tzar* for king. Karamzin and others, therefore, compare the term with the syllable *sar* found in the names of the Assyrian and Babylonian monarchs Phalassar (Pileser), Nabonassar, and Nabopolassar, and with the Hebrew *sar* (commander, chief). The Mongols used the same appellation, and probably the Russians adopted it from them. It is used by Russian annalists as early as the 12th century; but as the official title of the monarch it dates from the 16th. Before this period they styled themselves grand princes (*velikoi kniazh*) of Kiev, Novgorod, Vladimir, Moscow, &c. Basil Ivanovitch assumed in 1505 the title of *samoderzhetz*, or autocrat; his son Ivan the Terrible was crowned in 1547 as czar. After the annexation of Smolensk and the Ukraine, the title of czar of Moscow was changed into that of czar of Great, White, and Little Russia (of all the Russias). Though the word czar was used by the Russians also to designate the emperors of the West, as well as of the East (hence the name Tzargorod, city of the emperor, for Constantinople), Peter the Great, to be without contradiction ranked among the monarchs of the highest category, in 1721 assumed in addition the title of *imperator*, or emperor. In the long negotiations for the acknowledgment of this dignity, which was contested by many states of Europe, it was proved that Maximilian I., who in 1514 concluded a treaty of alliance with Russia against Poland, had used the term emperor (*Kaiser*) for czar, and that the same was done by other powers in the 16th and 17th centuries. It was not, however, till the reign of Catharine II. that Poland, Spain, and Turkey acknowledged the imperial dignity of Russia. The wife of the czar was anciently called *tzaritza;* his sons had the title of *tzarevitch*, his daughters that of *tzarevna.* Since the death of Alexei, the latter appellations have been replaced by those of grand prince and grand princess (generally rendered grand duke and grand duchess). Constantine, the second son of Paul I., received in 1799 the title of *tzesarevitch*, which was bestowed after his death in 1831, by the emperor Nicholas, upon his own son Alexander (now the reigning emperor). The wife of the latter received the title of *tzesarevna.* The crown prince Alexander Alexandrovitch, born in 1845, now bears the former title. The empress is styled in Russian *imperatritza.* The popular Russian appellation of the sovereign is still czar, or *hosudar* (*hospodar*, lord). Czar was also the ancient title of the princes of Grusia, or Georgia, and Imerethia, now Russian provinces.

CZARNIECKI, or **Czarnecki, Stefan,** a Polish general, born at Czaruca, in the palatinate of Sandomierz, in 1599, died at Sokolówka, Volhynia, in 1665. Of a noble but poor family, he studied at the university of Cracow, entered the army, and met with little advance-

ment before the Cossack rebellion in 1648. He was made captive in the battle at the Yellow Waters (May 25, 1648), but was set free after the pacification of Zborów, in the following year. He fought in the long and bloody battle at Beresteczko, June, 1651, in which the Cossacks and Tartars were defeated. In 1655 he defended the castle of Cracow with the utmost bravery against the king of Sweden, but was compelled by want of food to surrender. After the repulse of the Swedes from Czenstochowa he collected the scattered remains of the Polish troops, formed the confederation of Tyszowce with John Sobieski and others, and commenced a brilliant and successful course of partisan warfare against the Swedes, who had conquered the greatest part of the country, and before whom the patriotic but feeble king, John Casimir, had fled to Silesia. In the early part of 1656, with the assistance of 5,000 Tartars, he defeated them in four battles, brought back the king in triumph, and turned his arms with similar success against Rákóczy, prince of Transylvania, who had invaded Poland shortly after the Swedes, and whom he drove back into his country and compelled to sign the treaty of peace he had himself prescribed (July, 1657). The dignity of palatine of Red Russia, and the title of "Liberator of Poland," were his reward. In 1658 he marched to the assistance of Frederick III. of Denmark, who had invaded the German possessions of Sweden; he conquered the island of Alsen, took the command against the Russians, hastened to Lithuania, and won two great victories at Polonka, near Slonim, and on the banks of the Dnieper. Being sent against the Cossacks, he rapidly crossed the Dnieper, and took several places on that river. On June 7, 1661, he made a triumphal entry into Warsaw, where the king had convened a diet, and presented to him 150 flags taken from the enemy. The diet by a unanimous vote gave him in perpetuity the county of Tykocin. He then undertook to chastise the Cossacks, who, incited and supported by the Russians, had again commenced their devastations (1663); and in order to procure the assistance of the Tartar khan he set out with only 13 horsemen, following the course of the Dniester, hastened through Bessarabia and the Ukraine to the Crimea, and defeated the Cossacks at Czehryn (1664) and Stawiszcze (1665). But these exertions exhausted him; returning, he could not be carried beyond the village of Sokolówka, where he died in a peasant's hut, having received a few days before the staff of hetman of the crown.

CZARTORYSKI, the name of a Polish princely family, whose origin is traced to Korygiello or Constantine of Tchernigov, son of Olgierd, duke of Lithuania, and half brother of Jagiello, the founder of the dynasty of that name in Poland (1386). The name is derived from the dominion of Czartorya, and the place Czartorysk near Luck in Volhynia. Of the two branches of the family, which belongs to the highest rank of nobility in their country, and boasts of a number of statesmen equally remarkable for wealth, talents, and patriotism, the male line of the younger branch, that of Korzek, became extinct in 1810, while the elder, that of Zuków, is still flourishing. To this elder branch belong the following. **I. Michal Fryderyk,** born about 1695, died at Warsaw, Aug. 13, 1775. He was made castellan of Wilna in 1720, vice chancellor of Lithuania in 1724, and great chancellor of that principality in 1752. Together with his brother and other nobles, he formed an influential party, which strove to bring about a reform of the constitution of Poland designed to strengthen the influence of the king and the judiciary, and to restrain the anarchical independence of the high dignitaries of the crown. Their chief object was to change Poland into a hereditary kingdom, if possible under a Czartoryski. To counterbalance the influence of the reigning house of Saxony, as well as that of Austria, they courted the assistance of Russia, which by money and arms, however, finally decided the matter in its own favor. **II. August Alexander,** brother of the preceding, born in 1697, died in Warsaw in 1782. He was palatine of Red Russia, and lieutenant general of the army of the crown. He was a zealous coöperator with his brother, but was deceived in the expectation of seating his son upon the throne. By activity and lucky speculations he added greatly to the wealth of the family. **III. Adam Kazimierz,** son of the preceding, born at Dantzic, Dec. 1, 1731, died at Sieniawa in Galicia, March 19, 1823. After the death of Augustus III. (1763), the party headed by his father and uncle chose him as candidate for the royal dignity. To gain the assistance of Russia, his cousin Stanislas Poniatowski was sent to the court of St. Petersburg. But Catharine II. determined to put the crown of Poland upon the head of her favorite Poniatowski himself. This being known, Czartoryski yielded to his rival, to whom he had been attached from early youth. At the assembly of the nation preceding the election, the Czartoryskis and their adherents appeared in great numbers at Warsaw, and with them an army of Russians, sent to support the claims of Poniatowski. Adam Kazimierz was chosen marshal or president of the diet in spite of patriotic opposition roused by the presence of the Russians, and Poniatowski was elected king. After the first partition of Poland in 1772, Czartoryski, who possessed large estates in Galicia, accepted the commission of a general of artillery in the Austrian army, but still adhered to the party which worked for the restoration of the power of Poland through a constitutional reform, and distinguished himself at the long diet, which proclaimed the liberal constitution of May 3, 1791. He was also active in persuading the elector of Saxony to accept the hereditary succession to the crown of Poland, and Austria to engage in an alliance against Russia. But

all these attempts failed; the confederation of Targovitza against the new constitution was assisted by the arms of Russia, Poniatowski deserted the cause of the reform, and in 1793 a new partition of Poland ensued. Czartoryski now retired and lived at Vienna during the great rising under Kosciuszko (1794), whom he persuaded not to extend the insurrection over the frontiers of Austria; which, however, did not prevent that power from taking its share at the final dismemberment of Poland in 1795. He took no part in the events which followed the treaty of Tilsit, and the creation of the duchy of Warsaw by Napoleon (1807); but in 1812 he accepted the marshalship of the confederation, preceding the invasion of Russia, which promised the restoration of ancient Poland. The fatal issue of the great campaign foiled his hope, and Czartoryski retired to Pulawy, but in 1815 headed a deputation to the congress of Vienna, and presented to the emperor Alexander the outlines of a new constitution for the kingdom of Poland, now reorganized under his sceptre. Alexander made him senator palatine. **IV. Elzbieta,** wife of the preceding, born countess of Flemming in 1746, died in Galicia, June 17, 1835. She was distinguished by beauty, spirit, and patriotism, but also inclined to romantic extravagance. Having spent several years at court, and in travels in western Europe, she retired to Pulawy, where she constructed the admirable gardens of which Delille sings in the didactic poem *Les jardins*, and the "temple of the sibyl," containing a collection of relics of Polish history. She was also active in promoting industry and education. She published "Ideas on the Construction of Gardens" (Breslau, 1807), and "The Pilgrim in Dobromil" (Warsaw, 1818), a popular book on national history, for the instruction of the agricultural class. Having survived the three partitions and two restorations of Poland, she proved her patriotism in the revolution of 1830–'31, but had the mortification to see her seat at Pulawy bombarded by her own grandson, the prince of Würtemberg, who served in the Russian army. She passed her last years with her daughter in Galicia. The collections of Pulawy were in part dispersed, and in part transported to St. Petersburg. **V. Marya Anna,** daughter of the preceding, born March 15, 1768, died in Paris in October, 1854. In 1784 she was married to Louis Frederick Alexander, prince of Würtemberg; but as he betrayed the cause of Poland in 1792, she left him and was divorced. Her mother says in one of her letters: "A heavenly soul, an angelic character, a charming figure, talents, virtues, and many misfortunes—this is her history." In 1818 she published a romance, *Malwina*, which was translated into several languages. After the revolution of 1830–'31 she retired to Galicia. The estates of the Czartoryskis in the kingdom of Poland having been confiscated, her only son Adam, prince of Würtemberg, who had served against the Poles, offered her a pension, which she rejected in the following words: "Sir, I have not the honor of knowing you; I have no longer a son, and care little for fortune." **VI. Adam Jerzy,** brother of the preceding, born Jan. 14, 1770, died at Montfermeil, near Paris, July 16, 1861. He completed his education in France and at the university of Edinburgh, fought in 1792 against the Russians, in the Lithuanian army under Zabiello, and was sent in 1795 to St. Petersburg, as a hostage for the fidelity of his family. There, being attached to the person of the grand duke Alexander, the future emperor, he became his intimate friend. In 1792 he was sent by the emperor Paul as ambassador to the court of Sardinia, whence he was recalled in 1802 by Alexander, to assist him in the department of foreign affairs. This situation drew upon him much censure on the part of some of his countrymen, which, however, his conduct gradually overcame. On April 11, 1805, he signed for Russia the alliance with England, and accompanied Alexander in the campaign in Austria. He also followed him to the campaign in Prussia, and to the conferences of Tilsit in 1807. The duchy of Warsaw having been created by the treaty then concluded, he left the service of the emperor and lived retired till 1813, when he again accompanied Alexander to Germany, France, and the congress of Vienna. Made senator palatine of the new kingdom of Poland by Alexander, he appeared at its first diet, acting in behalf of liberal ideas. In 1821 he resigned the curatorship of the university of Wilna, which he had held since its organization in 1803, in consequence of the extraordinary persecutions to which a number of students, accused of conspiracy, had been subjected. After the outbreak of the revolution of Nov. 29, 1830, he was called to preside over the provisional government. He convoked for Dec. 18 the diet which proclaimed the independence of Poland, Jan. 25, 1831, when he became president of the national government. This dignity, in which he sacrificed immense riches, he laid down to serve as a private soldier under Ramorino. After the surrender of that general in Galicia, and the fall of Warsaw (September, 1831), he shared the fate of the Polish emigration in France. He was excluded from the amnesty of 1831; his estates in the Russian Polish provinces were confiscated; those in Austria were sequestered in 1846 in consequence of a declaration in favor of the revolutionary movement which drove the Austrians from Cracow, but were restored in 1848. In March, 1848, he issued a proclamation calling upon the representatives of Germany and France to unite for the restoration of Poland. In April of the same year he abolished serfdom on his estates of Sieniawa. Being the choice of the monarchical party in the Polish emigration, Czartoryski was often violently attacked by the democrats; but together with his wife, Anna (born Princess Sapieha in 1796), he

sustained his dignified position by a nearly regal munificence, which made his hotel in Paris a place of refuge for his suffering compatriots.—His eldest son, WITOLD, born June 6, 1824, died in Algiers, Nov. 14, 1865; and his second son, WLADYSLAW, born July 3, 1828, became head of the family. His first wife, a daughter of the ex-queen Christina of Spain, having died in 1864, he married in 1872 the princess Marguerite of Orleans, daughter of the duke de Nemours, second son of Louis Philippe.

CZASLAU, a town of Bohemia, 45 m. S. E. of Prague; pop. about 6,000. It has a church noted for its lofty spire, and containing the tomb of Ziska, the Hussite leader. The town also contains a high school and manufactories of copper and brass ware, beet sugar, and alcohol. It is memorable for a victory of Frederick the Great over the Austrians, May 17, 1742.

CZEGLÉD, a market town of Hungary, in the county and 42 m. S. E. of the city of Pesth, on the Pesth and Szolnok railway; pop. in 1870, 22,216. It is situated in a fertile district, which produces much grain and some red wine. It has a Roman Catholic and a Calvinist church. The inhabitants are mostly Magyars and agriculturists. The proximity of Kecskemét, Szolnok, and the Theiss made Czegléd conspicuous during the Hungarian war of 1848–'9.

CZELAKOWSKY. See CELAKOVSKY.

CZENSTOCHOWA, or **Czenstochau,** a town of Russian Poland, in the government of Piotrków, near the Prussian frontier, on the Warta, and on the Cracow and Warsaw railway; pop. in 1867, 14,167. It consists of an old and a new town, and the suburb St. Barbara. Its chief manufacture is chaplets and images for the pilgrims from Poland and other Slavic countries, who annually visit the shrine of the monastery of St. Paul, on the Klareberg (Pol. *Jasna Góra*), between the old and new towns, which contains a dark brown image of the Virgin, the miraculous power of which is a matter of general belief among the Slavic people. The monastery, having been pillaged by the Hussites in the 15th century, was fortified, and in 1655 withstood a siege of the Swedes of Charles Gustavus, who had occupied the whole country, and were here repulsed by a few friars. It was bravely defended by the confederates of Bar under Pulaski in 1771, when the old town was reduced to ashes. It was taken by the French in 1806, newly fortified by them in 1812, and finally given up to the Russians, who destroyed the fortifications.

CZERMAK. I. Johann Nepomuk, a Bohemian physiologist, born in Prague, June 17, 1828, died in Leipsic, Sept. 16, 1873. He was professor of zoölogy and comparative anatomy at Gratz 1855–'6, of physiology at Cracow 1856–'8, at Pesth 1858–'60, and at Jena 1865–'70, and in 1870 was appointed professor at Leipsic. He was the first to introduce laryngoscopy and rhinoscopy by means of a speculum, and wrote many works, including *Zur Orientirung im Gesammtgebiet der Zoologie* (Leipsic, 1855) and *Der Kehlkopfspiegel und seine Verwerthung für Physiologie und Medizin* (1860). **II. Jaroslaw,** a Bohemian painter, brother of the preceding, born in Prague, Aug. 1, 1831, died April 23, 1878. His earliest pictures exhibited at the academy of Prague were "Marius on the Ruins of Carthage" and "The Assassination of Wallenstein's Companions in Eger." Subsequently he became a member of the academy of Antwerp, and produced several historical pictures, including "Sloven Emigrants," which was purchased by King Leopold I., and "The Hussites entering with Procopius the Council of Basel." He produced many genre pictures, chiefly illustrating Slavic subjects.

CZERNOWITZ, Tchernovitz, or **Czernowice,** the capital of the Austrian crownland of Bukowina, on the Pruth, 450 m. E. of Vienna; pop. in 1870, 33,884. It stands on a hill overhanging the river, and has broad clean streets, with gardens and vineyards. It has a theological institution belonging to the Greek church, and the new cathedral is the finest building in the town. The former bishopric of Czernowitz was in 1873 made an archbishopric, with jurisdiction over the Greek church in Cisleithan Austria. There are also several Roman Catholic churches. The manufactures are inconsiderable, the most important being silver ware and hardware. The principal trade, which consists in the raw products of the country, is almost exclusively in the hands of Armenians and Jews. Czernowitz is connected by railways with Lemberg, Jassy, and Galatz.

CZERNY, Karl, a German composer, born in Vienna, Feb. 21, 1791, died there, July 15, 1857. He received his musical instruction from his father, a teacher of the piano, appeared at the age of 9 in a concert, and became acquainted with Beethoven and afterward with Clementi. He pursued the profession of his father from 1805 to 1835, and visited London in 1836. Among his pupils are Liszt, Döhler, and other distinguished artists. He wrote an immense number of compositions, and several theoretical works, of which the "Practical School of Composition" (English and German, 3 parts, London and Bonn, 1849), and the *Umriss der ganzen Musikgeschichte* (Mentz, 1851), are the most remarkable.

CZERNY GEORGE, or **Kara George** (Black George), the leader of the Servians in their insurrection against the Turks, and their chief during the first period of their national restoration, born about 1770, strangled and beheaded in July, 1817. He was a peasant, and served in the Austrian army in the war against Turkey, but soon left the service and fled to his native mountains, where he became the chieftain of a band of outlaws. When the insurrection of 1805 broke out, he became its leader. In 1807 the Servians had become masters of the whole country, and George was acknowledged by the sultan as their chief. During the following years he was engaged in hostilities with the Turks, supported indirectly by Russia

and France. After the treaty of Bucharest, in 1812, the Servians were abandoned by Napoleon and Alexander; and the Turks again made themselves masters of Servia, which however soon recovered a partial independence under Milosh Obrenovitch, George going into exile. In 1817, when the Greek Hetairia was secretly preparing a general insurrection in the northern provinces of the Ottoman empire, George returned to Servia and besought Milosh to raise the banner of insurrection. But the new ruler, afraid of a rival, informed the pasha of Belgrade of his presence, and that official demanded his head, which was sent to Constantinople, where it was publicly exposed. (See ALEXANDER KARAGEORGEVITCH.)

CZUCZOR, Gergely, a Hungarian author, born at Andód, county of Neutra, Dec. 17, 1800, died in Pesth, Sept. 9, 1866. He was a Benedictine monk, and from 1825 to 1835 was professor at the colleges of Raab and Comorn; but after he had removed to Pesth, where in 1835 he was elected assistant librarian and keeper of the archives of the Hungarian academy, the monks found fault with some of his poems, and he was compelled to relinquish his office and his public literary pursuits, and reenter the monastery. In 1844 he became the editor of the academical dictionary, in which he had advanced to the letter I when the work was interrupted by the revolution of 1848. Czuczor embraced the popular movement, and was sentenced in 1849 to six years' imprisonment for his *Riadó*, a Hungarian *Marseillaise*. At the intercession of the president of the academy, Count Joseph Teleky, he was enabled to resume in prison his labors on the dictionary. After the capture of Buda he was released by the Hungarian army; but on the defeat of the revolution he preferred prison to exile, and gave himself up to the victors. He was transferred to the state prison of Kufstein, where he remained until 1850, when he was pardoned. While at Kufstein he devoted himself to his dictionary (of which five volumes prepared under his direction were published before his death), and to a Hungarian translation of Tacitus. His epic poems, "The Battle of Augsburg," "The Assembly of Arad," and "Hunyady," are among his most renowned productions. He also published a translation of Sparks's "Life of Washington."

D

D, THE fourth letter in the Phœnician system of writing, and in most of those derived from it. It is the representative of the last of the four classes into which the sounds of human speech may be divided; A representing the first or faucal (vocal) class, B the second or labial, and C the third or guttural. The letters of this fourth, denti-lingual or lingui-dental class, viz., *d*, *t*, *s*, *z*, *l*, *r*, are visible signs of the articulated sounds produced by various movements of the tongue touching the teeth and gums, and are therefore convertible into each other; and from a misunderstanding of the real character of human phonetism, and of its graphic representation, the combination *th*, and even *g*, *j*, and *ch*, have been and are used instead of the letters of the fourth class. D is the sonorous counterpart of T, and is produced by applying the tip of the tongue to the superior incisive teeth and to their gum, while the tongue, obliquely rising, obstructs the passage of the breath; then by suddenly withdrawing this obstruction, while the larynx resounds (oscillates) during the passage of the air through the glottis, the sound in question is exploded. When the larynx does not thus resound, we utter the harder T. The *l*, *r*, are strictly lingui-dental, and *d*, *t*, *s*, *z*, denti-lingual. The Semitic name *daleth* (whence the Greek *delta*), signifying door, gate, has nothing to do either with the nature of the sound or with the figure of the letter, and was probably chosen merely on account of its beginning with this sound. Its figure is more or less triangular, and more or less rounded, while in many so-called alphabets it is a mere angle or crook. In old Slavic it occupies (erroneously) the 5th place, in Ethiopic the 19th, or, counting the Amharic additions, the 24th. Its hieroglyphs are the segment of a circle, an open hand, a beetle, which designate both T and D. Moreau de Dammartin derives the figure from the northern triangle, and from the little triangle in the head of the ram in the zodiac. In Arabic there are four modifications of it, to wit: *dal* (4, as a numeral sign), the 8th letter; *dzal* (700), the 9th; *dhad* (800), the 15th; and *dha* (900), the 17th; but in Cufic writing only the first is used. The Dēvanāgari has two series of letters, each consisting of five (*t*, *th*, *d*, *dh*, *n*), one of which is named cerebral or lingual, and the other dental; most of the modes of writing employed in the middle and south of Asia follow this arrangement. In Mongolic and Mantchooric D is distinguished from T by a dot, as it is also in the runes. The Finns, Lapps, and other northern people, scarcely distinguish it from T. It is the only sonorous consonant with the Hurons, and was very prevalent among the natives of the Mexican plateau and in the Quichua of South America. It does not occur on Etruscan monuments, T being used in its place. Grimm exhibits the convertibility of the lingui-dentals as follows:

Greek.	Gothic.	Old High German.
Δ	T	Z
Θ	D	T
T	Th	D

This scheme is illustrated in some of the following examples:

Gr. θυγάτηρ, Goth. *dauhtar*, old Ger. *Tochtar*, Eng. daughter. Gr. ὀδούς, Goth. *tunthus*, old Ger. *Zant*, Eng. tooth, &c. Latin: quo*d*annis and quo*t*annis; ten*d*o, ten*s*um; preheno*d*o, preheno*s*um. Euphonic: pro*d*es, ἄν*δ*ρες, French gen*d*re, &c., instead of pro-es, αν-ρες, gen-re, &c. Wallachian, zece, Lat. *d*ecem; zi, *d*ies; orz, hor*d*eum. Ital. *T*rapani, Lat. *D*repana. D is ejected from the following: Ital. *a*ombrare, Lat. a*d*umbrare; *Po*, Lat. Pa*d*us, &c.; Span. *oir*, *caer*, *creer*, Lat. au*d*ire, ca*d*ere, cre*d*ere; so in the French, *ouïr*, *Juif*, *sueur*, Lat. au*d*ire, Ju*d*æus, su*d*or. L substituted for D: cica*l*a, Lat. cica*d*a; Span. co*l*a, Lat. cau*d*a; Portug. ju*l*gar, Lat ju*d*icare; U*l*ysses, Ὀ*δ*υσσεύς; *l*acryma, δά*κρυ*, &c. R substituted for D; me*r*idies for me*d*idies. D is lost in the following: Ital. *à*, *piè*, Lat. ad, pede, &c.; Span. *fé*, Lat. fides. Ger. *Th*eil, *d*eal; gu*t*, goo*d*; Go*tt*, Go*d*; Blu*t*, blood, &c. Ital. dan*z*are, French dan*s*er, Ger. tan*z*en, Lat. *t*en*d*ere. Ital. Al*d*obrando, Ger. Al*t*-brandt; *T*ancredo, *D*ankrath, &c. Eng. *t*en, *t*ooth, *t*oken; Lat. *d*ecem, *d*ens, *d*ocumentum; Ger. *z*ehn, *z*ahn, *z*eichen, &c. Ger. *d*ick, *th*ick; *d*ünn, *th*in; *D*aum, *th*umb; *d*er, *d*ie, *d*as, *th*e. Lat. participle passive, -*a*tum, -*i*tum; Eng. -*ed*; Span. -*a*do, -*i*do, &c.

—D began to be used as a numeral sign for 500 about A. D. 1500, when the Dutch printers employed the IↃ in the ancient CIↃ (M), 1,000, combining those signs in the figure of D. It was used by the Romans in the following abbreviations: D. for Decius, Dominus, Divus, Deus, Dictator, Dacia, Digestum, &c.; D. D. for Decemvirorum decreto; D. D. D. for Decemvirorum decreto datum, also for Dat, donat, dedicat; d. for die, dabam (I wrote), &c.; D. M., Diis manibus; D. O. M., Deo optimo maximo. With the Catholics D is the dominical letter when the first Sunday in January falls on the 4th.—On the reverse of European coins D indicates Lyons in France, Aurich and Düsseldorf in Prussia, and Gratz in Austria.—D in music denotes the second interval of the present German and English diatonic scale, or the third string of the chromatic scale; this was the *re* of Guido Aretino, and is the *la* of the French.

DABLON, Claude, a French Jesuit missionary in Canada, New York, Michigan, and Wisconsin, born in 1618, died in Quebec, Sept. 20, 1697. He arrived in 1655, and began a mission at Onondaga; in 1661 set out to reach Hudson bay overland; went to Lake Superior with Marquette in 1668, and established the mission of Sault Ste. Marie, and one among the Foxes. He became superior of the Canada missions in 1670, and prepared the *Relation de la Nouvelle France* for 1671–'2, the last published at the time. His *Relation* for 1672–'3 was printed at New York in 1861, and that for 1675 in 1854, and both at Paris, with some for subsequent years, in 1861. A general *Relation* prepared by him for 1673–'9 appeared at New York in 1860. The account of Marquette's discovery of the Mississippi, as edited by him, was printed in 1853.

DACCA. I. A district of the province of Bengal, in British India, between lat. 23° 12′ and 24° 17′ N., and lon. 90° 11′ and 90° 58′ E.; area, 2,897 sq. m.; pop. in 1871, 1,853,416. It is almost entirely level, and traversed by numerous rivers which abound with fish. Of wild animals, there are the elephant, buffalo, tiger, bear, and leopard; of wild birds, the fishing eagle, vulture, kite, adjutant bird, and crane. The porpoise is seen in the large rivers, where the sharp-beaked and the blunt-beaked crocodile are also found. Snakes are numerous. The domestic animals are kine and buffaloes. The number of wild animals is diminishing, and land formerly covered with jungle has been cleared for cultivation. The land is inundated every year, and very fertile; rice, cotton, sugar, betelnut, hemp, and indigo and other dyestuffs are produced to some extent. The cotton product has considerably declined since the closing of



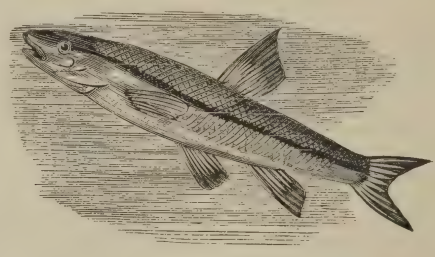
Dacca.

the fine muslin manufactories at Dacca, and the attempts to introduce American cotton have not been successful. The British authority was established in 1765. In the N. part are two distinct tribes, the Kunch and Rajbansi, more vigorous than the rest of the population, which is about equally divided between Brahmans and Mussulmans; the latter, however, are considered more numerous. The Eastern Bengal railway, 159 m. long, runs from Calcutta to Goalundo at the confluence of the Brahmapootra and the Ganges, and intercepts the traffic which comes down these rivers. The section from Kootshe to Goalundo was opened for use Dec. 31, 1870. **II.** The capital of the district, situated on the Burha Gunga, an arm of the Brahmapootra, 150 m. N. E. of Calcutta, and 116 m. E. S. E. of Moorshedabad; pop.

about 50,000, of whom more than half are Mussulmans. It was once a considerable and wealthy city, being the centre of the manufacture of fine muslins. The spinning of the almost impalpable threads for these goods was entirely by hand. The muslins, named from their fineness *abrawan*, or "flowing water," and *shabnam*, or "evening dew," were never imitated elsewhere. With the decay of the Indian courts, the chief customers, the demand ceased and the manufacture has entirely stopped. Dacca now exhibits little more than ruins, extending several miles along the river, and in many places overgrown with dense jungle. The streets of the inhabited part are narrow and winding; the houses of the wealthy are of brick, but the bazaars and the cottages of the poor are only thatched. The extensive citadel, on the western side of the town, and the magnificent palace built by Aurungzebe's grandson, Azim Ushaun, toward the close of the 17th century, are in ruins. The city and suburbs possess a number of bridges, landing places, ferry stations, bazaars, and buildings for fiscal and judicial purposes, a jail and jail hospital, a lunatic asylum, an Indian hospital, an elephant depot, a large number of Mussulman mosques and Brahmanical temples, and Anglican, Greek, Armenian, Catholic, and Baptist churches. The last denomination maintains a missionary establishment and several schools. There is a college managed by a local committee, but under the control of the government. About $60,000 was paid to the city in 1850 as a bequest of Mr. Robert Mitford, for the benefit of the native poor. The climate here is not so hot and unwholesome as in some other parts of India, owing to its situation near rivers whose currents are rapid. The unhealthy season is from August to October; throughout the rest of the year the city and vicinity are salubrious.—During part of the 17th century Dacca was the chief city of Bengal. The disorders produced by the invasion of Nadir Shah injured its prosperity. Many ruins within the city and its suburbs bear witness to its ancient importance.

DACCA JELALPOOR. See Fureedpoor.

DACE, a name applied to several native and foreign cyprinoid fishes belonging principally to the genus *leuciscus* (Klein), which, as far as the North American species are concerned, has been subdivided into the genera *argyreus* (Heckel), *leucosomus* (Heckel), *plargyrus* (Rafinesque), *Richardsonius* (Girard), *luxilus* (Raf.), *semotilus* (Raf.), *mylocheilus* (Agass.), *algansea* (Gir.), *hybognathus* (Agass.), *ptychocheilus* (Agass.), *Hudsonius* (Gir.), *hybopsis* (Agass.), *clinostomus* (Gir.), *ceratichthys* (Baird), and *chondrostoma* (Agass.). From this long array of new genera it is evidently impossible to give here anything like a satisfactory account of the numerous species popularly called dace. The true *leucisci* are far more numerous in the old world than in the new. As a species of this genus may be mentioned the orange dace (*L. croceus*, Storer), about 3¼ in. long, of a greenish color, with the throat flesh-colored, an indistinct brown band on the side running longitudinally with a small black blotch at the end, and the fins orange; from Alabama. These genera belong to the malacopterygian or soft-rayed fishes; the mouth is slightly cleft, the jaws weak and without teeth, and the pharyngeal bones toothed; the body scaly, one dorsal fin, and no adipose dorsal; sometimes with barbels on the head. The name of shiner is also given to many of the species called dace. The roach dace, or silvery dace (*leucosomus pulchellus*, Storer), is among the largest species, being sometimes 14 in. long; the color is dark brown above, the upper portion of sides brassy green, lower portion and abdomen flesh color, with golden reflections; the head is black above with the gill covers coppery, the upper jaw slightly the longer. It delights in eddies and pools, and is found from New York to Nova Scotia. It is synonymous with *cheilonemus* (Bd.), and has five described species; there is a small barbel upon the maxillary, near the angle of the mouth.



Black-nosed Dace (Argyreus atronasus).

The black-nosed dace (*argyreus atronasus*, Mitch.) rarely exceeds 3 in. in length, is found in the rivers of Massachusetts and New York, and is often called brook minnow. It is reddish brown above, abdomen silvery white, with minute brown blotches, a dark band passing from the nose to the tail. The natural characters of the genus are a snout more or less protruding beyond the lower jaw, with a small barbel at the angle of the mouth; it is synonymous with *rhinichthys* (Agass.). The long-nosed dace (*A. nasutus*, Ayres) is about 4 in. long, inhabiting rapid northern streams; it is dark brown above, white below, with the dorsal and caudal fins brownish. The smaller specimens of the last two species make excellent bait for large trout. Seven other species are described. The red dace (*plargyrus cornutus*, Mitch.), one of the prettiest of the American cyprinoids, is about 5 in. long, blackish brown above, with metallic reflections, sides brilliant and cupreous, all the fins and opercles margined with crimson; the jaws are equal, and there are no barbels on the head; the scales are very large, and imbricated. This is a very active fish, is common

in streams frequented by brook trout, and is frequently taken by fly-fishers for the latter species; it is often eaten in the British provinces, and is in the best condition in May. This genus is synonymous with *hypsolepis* (Bd.), and contains six other described species. The golden and flat dace belong to the genus *luxilus* (Raf.), and species *L. Americanus* (Lacép.) and *L. compressus* (Raf.); five other species are described; no barbels on the head. The lake dace is *semotilus atromaculatus* (Mitch.), about 10 in. long; four other species are described. The northwest dace is *mylocheilus caurinus* (Rich.), about a foot long, discovered in Columbia river; it has a maxillary barbel; there are two other species. The Columbia river dace is *ptychocheilus Oregonensis* (Rich.); it is more than a foot long, brownish above, silvery white below; there are four other species. The shining dace of Lake Champlain is *hybognathus nitidus* (De Kay), 2 in. long; there are four other species. Storer's dace, a western species, about 8 in. long, is *hybopsis Storerianus* (Kirtland); there is also a southern species (*H. Winchelli*, Gir.). The common dace of Europe is the *leuciscus vulgaris* (Cuv.), inhabiting the deep and still water of the streams of Great Britain, France, Germany, and Italy; it rarely exceeds 10 in. in length; the prevailing color is dusky blue above, becoming paler on the sides, and white on the abdomen; cheeks silvery; dorsal and caudal fins pale brown; the other fins nearly white, tinged with pale red. They are gregarious, swimming in shoals, and spawning in June; they feed on worms and insects, but will rise at an artificial fly. The flesh is not much esteemed, and it is principally used as a bait for pike-trolling, on account of its silvery brightness. The shining scales of the roach and other dace are employed in manufacturing artificial pearls.

DACIA, a province of the Roman empire, bounded N. by the Carpathian mountains, which separated it from Sarmatia, S. by the Danube (Ister, Danubius), which separated it from Mœsia, E. by the Pruth (Hierasus) and the Euxine, and W. by the Theiss (Tibiscus, Tysia). It comprised part of Hungary, Transylvania, and Roumania. According to some, it included N. E. the Bukowina, and E. Bessarabia. Before the Roman conquest it was the habitation of the Daci, probably of Thracian origin, called by historians the most warlike of men, and according to some identical with the Getæ, who at the time of Darius's Scythian expedition lived between the Balkan and the Danube. Strabo speaks of the Getæ as living in the E. and the Daci in the W. part of the country. In the reign of Augustus they crossed the Danube, plundered the allies of the Romans, and spread terror even among the latter, but were finally driven back. Under their king Decebalus they compelled Domitian, after a protracted struggle, to purchase peace by an annual tribute. The emperor, however, decorated himself with the title of Dacicus. Trajan refused to pay the tribute, and renewed the war. Decebalus ended the struggle only with his life (A. D. 106), after exhausting every resource of valor and policy. The new province was colonized by inhabitants from all parts of the empire, with whom originated the Romanic language of the modern Wallachs, both in Transylvania and Roumania. Notwithstanding the resolution of the successors of Trajan to contract the limits of the empire, Dacia remained one of its provinces. In the 3d century it was invaded by the Goths, and resigned to them by the emperor Aurelian, who removed the Roman inhabitants to Mœsia, giving the name of Dacia to that part of it in which they settled.

DACIER. I. André, a French scholar, born at Castres in 1651, died in Paris, Sept. 18, 1722. He was an industrious editor and translator of classical authors. Among his translations were the works of Marcus Aurelius, Plutarch's "Lives," Aristotle's "Poetics," the "Œdipus" and "Electra" of "Sophocles, the works of Hippocrates and Horace, and some of Plato's dialogues. He was one of the scholars engaged in editing the celebrated classical series *ad usum delphini*, ordered by Louis XIV.; but his only contribution to it was an edition of Pomponius Festus and Valerius Flaccus. He was keeper of the library of the Louvre, and a member of the French academy, of which he became perpetual secretary in 1713. **II. Anne** (Lefèvre), a French scholar, wife of the preceding, born in Saumur in March, 1654, died in Paris, Aug. 17, 1720. She was the daughter of the distinguished scholar Tanneguy-Lefèvre, and acquired her first instruction from overhearing his lessons to her brother. Lefèvre, amazed at the extent of the information thus obtained, devoted himself to her education; and at his death, in 1672, she was one of the most accomplished scholars in Europe. In that year she went to reside in Paris, where in 1674 she published an edition of Callimachus. The reputation acquired by this work procured her an invitation to assist in preparing the Delphin editions of the classics. In the discharge of this duty she prepared editions of Florus, Eutropius, Aurelius Victor, Dictys Cretensis, and Dares Phrygius. In 1683 she was married to André Dacier, a favorite of her father, under whom they had for many years been fellow pupils. This union was called "the marriage of Greek and Latin." Two years afterward they both abjured Protestantism, and received from the king a pension of 2,000 livres. Mme. Dacier thenceforth continued to devote herself no less assiduously to literary pursuits, and produced translations of several plays of Plautus, the whole of Terence, the Iliad and Odyssey of Homer, the "Plutus" and "Clouds" of Aristophanes, and the whole of Anacreon and Sappho. The translations from Homer involved her in a controversy with M. de la Motte and others

concerning the comparative merits of ancient and modern literature, Mme. Dacier vigorously sustaining the former in *Des causes de la corruption du goût* (12mo, 1714), *Homère défendu contre l'Apologie du père Hardouin* (1716), &c. She also assisted her husband in the translation of Marcus Aurelius and Plutarch's "Lives." She was distinguished for modesty and amiability, and amid her engrossing literary avocations did not neglect her domestic and maternal duties.

DA COSTA, Izaak, a Dutch poet, born in Amsterdam, Jan. 14, 1798, died in Leyden, April 28, 1860. He was a Portuguese Jew by descent, but in 1822, with his wife, became a Christian. He received the degree of doctor of laws at Leyden in 1818, and of philosophy in 1821, and eventually became one of the directors of the seminary of the free Scotch church. He was much benefited by the instruction and friendship of Bilderdijk, after whose death in 1831 he was regarded as the most eminent poet of Holland. His best poems are, *Prometheus* (1820), *Poëzij* (2 vols., 1821–'2), *God met ons* (1826), *Festliederen* (1828), *Vijf en twintig jaren* (1840), *Hagar* (1852), and *De slag von Nieuwpoort* (1857). Among his other works are: "History of the Deliveries of the People of Israel" (1840), which has been translated into English and German; "Apologetic Biography of St. Paul" (2 vols., 1846); and a complete edition of Bilderdijk's poetry (16 vols., Haarlem, 1857–'60).

DACTYLOLOGY. See DEAF AND DUMB.

DADE. I. The N. W. county of Georgia, bordering on Tennessee and Alabama; area, 160 sq. m.; pop. in 1870, 3,033, of whom 245 were colored. It occupies Lookout valley, and is encompassed by mountains of considerable height. Iron, coal, and other minerals are found in various parts. The Alabama and Chattanooga railroad passes through it. The chief productions in 1870 were 26,637 bushels of wheat, 65,488 of Indian corn, and 27,703 lbs. of butter. The total value of live stock was $109,865. Capital, Trenton. **II.** The S. E. county of Florida, bordering E. and S. E. on the Atlantic ocean and straits of Florida, and S. W. on the gulf of Mexico; area, about 4,400 sq. m.; pop. in 1870, 85, of whom 13 were colored. Along the coast, which is indented by several bays, are numerous islands belonging to the county. Lake Okeechobee occupies the N. W. corner. The surface is low, level, and almost wholly occupied by the Everglades, a vast expanse of shallow water, dotted over with innumerable small islands. Proposals have been made to drain these by canals. During the rainy season they are quite impassable. The county has one good harbor for vessels drawing 9 ft. of water, and on Cape Florida, at the entrance to this harbor, is a lighthouse. Capital, Biscayne, or Miami. **III.** A S. W. county of Missouri, with a diversified surface and a productive soil; area, 498 sq. m.; pop. in 1870, 8,683, of whom 204 were colored. Sac river, a tributary of the Osage, is the principal stream. The chief productions in 1870 were 78,016 bushels of wheat, 416,307 of Indian corn, 109,553 of oats, 92,688 lbs. of butter, 26,482 of wool, and 22,004 of tobacco. There were 3,544 horses, 2,509 milch cows, 5,190 other cattle, 11,476 sheep, and 14,007 swine. Capital, Greenfield.

DÆDALUS, a mythical personage, generally represented as an Athenian of the royal house of Erechtheus, though, from his long sojourn in Crete, he is also called a Cretan. Having become a great sculptor, he instructed in his art Calos, Talus, or Perdix, his sister's son, but afterward killed him through envy when he saw the skill of his disciple surpassing his own. Condemned to death by the areopagus, he fled to Crete, where he gained the friendship of Minos; but having constructed the wooden cow for Pasiphaë, and the labyrinth of Cnossus, in which was kept the Minotaur, the monster to which she gave birth, he was imprisoned. Released by Pasiphaë, and finding no vessel to escape from the island, as Minos had seized all on the coast, he contrived wings for himself and his son Icarus, which were fastened on with wax. He took his flight over the Ægean, and arrived safely in Sicily; but Icarus flew too near the sun, the wax melted, and he dropped and perished in that part of the sea which is hence called the Icarian. According to some writers, Dædalus alighted at Cumæ in Italy, where he erected a temple to Apollo, dedicating to that divinity the wings which had saved him. When Minos learned his place of refuge, he sailed with a fleet to Sicily, where he was treacherously murdered by Cocalus, king of the Sicani, who protected the fugitive. According to others, Dædalus was protected by the daughters of that king. Several works of art in Greece, Italy, Libya, and the Grecian islands were attributed to him, as well as the invention of several tools belonging to his art. The Greeks gave the name of *dædala* to certain ornamented wooden images of their gods.

DAEL, Jan Frans van, a Belgian painter, born in Antwerp in 1764, died in Paris in 1840. He began with architecture, was afterward employed in decorating French palaces, and acquired celebrity in France as a fruit and flower painter. He was patronized by Louis XVI., Josephine, and Maria Louisa, and received marks of distinction from Napoleon I. and Louis XVIII. He painted in the style of Van Huysum and of his friend Van Spaendonck, by whose side he was buried in Père-la-Chaise. His most famous works are "A Girl's Tomb," adorned with flowers and fruit, and "The Crusader." The latter, originally purchased for 15,000 francs by Josephine, afterward became the property of the museum of Antwerp.

DAENDELS, Herman Willem, a Dutch general, born at Hattem, Gelderland, Oct. 22, 1762, died on the Guinea coast, Africa, May 2, 1818. He took the patriotic side in the political strife of 1787, and on the triumph of the Orangists

fled to France, and engaged in business in Dunkirk. He became colonel of a corps of volunteers in the French army in 1793, and served in the expeditions of Dumouriez and Pichegru against Holland, rising to the rank of brigadier general; and upon the expulsion of the house of Orange by the latter he entered the service of the Batavian republic, and took part in the organization of the government. He commanded one of the three divisions which in 1799 repulsed the descent of the Russian fleet on the coast. In 1803 he resigned, but on the outbreak of war in 1806 he entered the service of the king of Holland, and was restored to his former rank, and served against the Prussians. In October, 1806, he occupied East Friesland, and was made governor of Münster. He was subsequently made commander-in-chief of the cavalry, marshal of Holland, and governor general of the East Indian provinces, holding the last office from 1808 to 1811, displaying great administrative ability, and introducing important reforms. He subsequently served in the Russian campaign, and after the fall of Napoleon was intrusted with the organization of the E. African colonies which had been restored to the Dutch. He published an account of his East Indian administration, *Staat der Nederlandschen Oostindischen Bezittingen*, which gave important information of the resources and moral condition of Java and the neighboring islands.

DAFFODIL. See NARCISSUS.

DAGGETT, David, LL. D., an American jurist, born at Attleborough, Mass., Dec. 31, 1764, died in New Haven, Conn., April 12, 1851. He graduated at Yale college in 1783; was admitted to the bar in New Haven in 1786; was elected representative to the legislature in 1791; and, after holding other offices, was in 1813 chosen to the United States senate, where he continued till 1819. In 1824 he became instructor in the law school in New Haven; in 1826 was appointed Kent professor of law in Yale college; and in the same year was chosen judge of the superior court, and received the degree of LL. D. from Yale college. In 1832 he was made chief justice of the supreme court of the state, retiring by limitation of age in 1834. A sketch of his life and character, by the Rev. Dr. Dutton, was published in 1851.

DAGGETT, Naphtali, an American clergyman, born at Attleborough, Mass., Sept. 8, 1727, died in New Haven, Conn., Nov. 25, 1780. He graduated at Yale college in 1748; in 1751 was ordained pastor of a Presbyterian church in Smithtown, Long Island; and in 1755 was chosen professor of divinity in Yale college, which office he held till his death. On the resignation of President Clap, in 1766, he was chosen president *pro tempore*, and in this capacity officiated for more than a year. In July, 1779, when the British attacked New Haven, Dr. Daggett took part in the resistance to them, and being taken prisoner, was treated with so much severity that he never recovered from the effects of it. He published several sermons, and in 1780 an account of the famous "dark day" in New England.

DAGHESTAN, a province of Russia, comprising most of the E. slope of the Caucasus toward the Caspian sea, from the Sulak or Koisu river on the north to Mount Bazardynsi on the south, between lat. 41° and 43° 30′ N. and lon. 45° 30′ and 48° 30′ E.; area, about 11,000 sq. m.; pop. in 1867, 449,096. Three principal branches of the Caucasus advance into Daghestan, terminating respectively about lat. 41°, 42°, and 43°. The second of these divides the country into northern and southern Daghestan, and forms the famous Derbent pass. Parts of the country are very mountainous, with deep valleys, numerous lakes, streams, and glaciers. The highest peaks rise to an elevation of about 14,000 ft. The rivers are for the greater part mountain torrents flowing into the Caspian, whose shores have few harbors. The mountains of original formation are extremely rugged, and the climate in the higher regions severe; the narrow valleys are fertile, producing grains, rice, millet, saffron, fruit, nuts, wine, and fine timber; the iron, lead, and sulphur mines are only developed to supply the necessities of war, and the weapons manufactured here are justly celebrated. Cattle are raised in large numbers, as well as excellent horses, asses, camels, and a species of fat-tailed sheep. Western Daghestan is the chief abode of the powerful tribe of the Lesghians (the Albani of antiquity), chiefly Mohammedans of the Sufi sect. The Lesghians are still virtually independent of Russia, to which their country nominally belongs. Further north in the hilly region live Tartar tribes of Mongol descent, all of them Mohammedans, and more or less nomadic, living principally by the raising of cattle and horses. Most of them are peaceable Russian subjects. A few towns of some commercial importance, among them Derbent, the capital, and Tarku, are situated along the Caspian coast, which is flat, marshy, or sandy, and in many portions not well watered. The great rising against Russia in 1823 commenced in Daghestan. (See CAUCASUS.)—The name Daghestan is also used in a wider sense, in which it embraces the adjoining territories W. to the vicinity of the Kasbek and S. to the peninsula of Apsheron.

DAGOBERT I., king of the Franks, born about 600, died at Épinay, Jan. 19, 638. He was the son of Clotaire II., and by the help of the great feudal lords became king of Austrasia in 622, during the life of his father. Upon his father's death in 628 he inherited Neustria and Burgundy, and three years later he reannexed Aquitania, which had been inherited by his brother Charibert. He then reigned over the whole Frankish dominion, and successfully opposed the encroachments of the Frankish lords, repelled an invasion of the Vascones, and forced the Bretons to acknowledge his supremacy. His court almost equalled in magnificence that

of Constantinople. He founded several monasteries, which he richly endowed, including the abbey of St. Denis. The goldsmith Eligius, or Éloi, afterward canonized, was one of his ministers, and greatly contributed to the splendor of his reign. One of the king's most meritorious acts was the revision and publication of the old national statutes, known as the Salic and the Ripuarian laws. His fame is marred by his perfidy toward some Bulgarians whom he gave an asylum within his territory, and afterward caused to be slaughtered; and above all by his debauchery. "This Solomon of the Franks," an old chronicler says, "entertained no less than three wives bearing the name of queens, and so many concubines that it would be too long to enumerate the same." He was buried at St. Denis.—**Dagobert II.,** the last Merovingian king of Austrasia, son of Sigebert II. and grandson of the preceding, born in 652, was secretly sent to Ireland in 659 by Grimoald, mayor of the palace, afterward lived in England, was restored by his subjects in 674, and was assassinated by Martin and Pepin of Héristal in 679.

DAGON (Heb. *dag*, fish), a national divinity of the Philistines, believed to have personified the reproductive power of nature. Dagon was represented with the upper part of a man and the hind part of a fish. The Philistines offered a great sacrifice to him in his temple at Gaza, when Samson was delivered into their hands. Another principal temple was in Ashdod; this was destroyed by Jonathan the Asmonean.

DAGUERRE, Louis Jacques Mandé, one of the inventors of the process called after his name, born at Cormeilles, department of Seine-et-Oise, France, in 1789, died at Petit-Brie-sur-Marne, July 12, 1851. He commenced his career in Paris as a scene painter, and rivalled the best of his contemporaries in the brilliancy and novelty of his effects. Having assisted M. Prévost in painting his panoramas of Rome, London, Naples, and other great cities, he conceived the idea of heightening the effect of such views by throwing colored lights and shadows upon them, so as to produce the various changes of the day and season. This invention, called the diorama, was perfected by Daguerre and Bouton in 1822, and for many years the former was busily employed in preparing pictures for exhibition in the buildings erected for that purpose in Paris and London. In 1839 he sustained a great loss by the burning of his establishment in Paris. Several years previous Joseph Nicéphore Niepce and Daguerre had each begun independently to make experiments for the purpose of discovering a method of obtaining permanent facsimile copies of objects by the chemical action of the sun. A process by which that result could be obtained having been discovered by Niepce, he and Daguerre, on Dec. 14, 1829, united to develop and perfect it. After the death of Niepce in 1833 Daguerre prosecuted his researches alone, and made such great improvements in the process that Niepce's son consented that the invention should be known by Daguerre's name only, instead of the names of both, as had been agreed. The invention was announced at the session of the academy of sciences in January, 1839, by Arago, and excited a profound interest, which was heightened by the exhibition soon after of a number of pictures taken by the new process. The same year Daguerre offered the French government to make the invention public for an annuity of 4,000 francs to Niepce's son and one of equal amount to himself. The offer was accepted, but Daguerre's annuity was made 6,000 francs upon his agreeing to make public also such information as he possessed in regard to dioramas and any further improvements he should make in the daguerreotype. He was also made an officer of the legion of honor, of which he was previously a member. To the close of his life he continued to labor on the improvement of the daguerreotype. His *Historique et description des procédés du daguerréotype et du diorama* (1840) passed through many editions, and was translated into English. (See PHOTOGRAPHY.)

DAGUIN, Pierre Adolphe, a French physicist, born at Poitiers in 1814. He is a professor in the faculty of sciences, director of the observatory, and member of the academy of sciences of Toulouse. His principal work is *Traité élémentaire de physique théorique et expérimentale, avec les applications à la météorologie et aux arts industriels* (3 vols., 1856–'9; 3d revised ed., 4 vols., 1867).

DAHL, Johann Kristen Clausen, a Norwegian landscape painter, born in Bergen, Feb. 24, 1788, died in Dresden, Oct. 14, 1857. He had resided in Dresden since 1818. In 1820–'21 he visited the Tyrol, Naples, and Rome, in company with Christian VIII. of Denmark. His works include a "Coast View of Bergen," "The Shipwreck," "Saxon Switzerland," and a great "Winter Landscape in Seeland."

DAHL, Mikael, a Swedish portrait painter, born in Stockholm in 1656, died in London in 1743. In 1688, having studied in France and Italy, he went to London, where he was patronized by Queen Anne and the prince consort. At Hampton court are several of his portraits of admirals. His equestrian portrait of Charles IX. of Sweden is at Windsor, and some of his whole-length representations of ladies are at Petworth. He also painted a portrait of Lady Walpole, which is at Houghton.

DAHL, Vladimir Ivanovitch, popularly known under his *nom de plume* KOSAK LUGANSKI, a Russian author, born in St. Petersburg about 1802, died in 1872. He was educated in the naval academy, and served in 1819 on board the Black sea fleet. He subsequently studied medicine at Dorpat, and was attached as physician to the army in the Polish campaign of 1831, and in 1839 to that under Perovski operating against Khiva. He held various offices, and travelled extensively through the empire.

He was a diligent collector of Russian folk lore, and was in possession of more than 4,000 popular tales and fables, besides a vast number of proverbs. He published the latter in a separate work, and communicated the former to other scholars. Many of the tales are included in Afanasieff's collection. His principal work is the "Dictionary of the Living Russian Tongue" in six large volumes, finished in 1866, which is indispensable for the study of popular Russian literature.

DAHLBOM, Anders Gustaf, a Swedish entomologist, born in East Gothland, March 3, 1806, died May 3, 1859. He graduated at Lund in 1829, was teacher of natural history there, and published from 1829 to 1852 ten distinct works on insects in Latin and Swedish, of which his *Hymenoptera Europæa, præcipue Borealia*, is the most important.

DAHLGREN, Karl Johan, a Swedish poet, born at Quillinge in June, 1791, died May 2, 1844. He was educated at Upsal, and first published poetry in 1813, while studying theology. In 1824 he became minister of a church in Stockholm. He was elected in 1829 to the house of burghers, and was twice reëlected. "The Tower of Babel" (2 vols., 1824–'5), "The Evening Star" (1832), and "A Lady in the Country" (1838), were some of his romances. His principal poems were collected under the titles *Ungdomskrifter* (2 vols., 1829) and *Samlade Skrifter* (1834). He also wrote several plays. A complete edition of his works was published in Stockholm in 6 vols., 1847–'52.

DAHLGREN. I. John Adolf, an American naval officer, born in Philadelphia in November, 1809, died in Washington, July 12, 1870. He was appointed midshipman in 1826. His first cruise (1827–'9) was in the frigate Macedonian of the Brazil squadron. He next served (1830–'32) on the sloop Ontario of the Mediterranean squadron. From 1836 to 1842 he was employed on the coast survey, and he received a commission as lieutenant in 1837. In 1844–'5 he served on the frigate Cumberland of the Mediterranean squadron. From 1847 to 1857 he was employed in the ordnance department, and made a series of experiments in the construction of heavy shell guns, which resulted in the adoption of a new pattern, called the Dahlgren gun. He also invented a rifled cannon for naval warfare, and introduced into use bronze howitzers of 12 and 24 pounds calibre. He published "Report on the 32-pounders of 32 cwt." (1850), "System of Boat Armament in the United States Navy" (1852), "Naval Percussion Locks and Primers" (1852), and "Shells and Shell Guns" (1856). He received a commission as commander in 1855, was in command of the ordnance ship Plymouth in 1858–'9, and in 1860–'61 was engaged in ordnance duty at the Washington navy yard, to the command of which he was assigned in 1861. He was promoted to the rank of captain in July, 1862, and was shortly afterward appointed chief of the bureau of ordnance. Having been appointed rear admiral, Feb. 7, 1863, he was placed in command of the South Atlantic squadron. From 1866 to 1868 he was in command of the South Pacific squadron. In 1869 he resumed command of the Washington navy yard. **II. Ulric,** son of the preceding, an American soldier, born in Bucks co., Pa., April 3, 1842, killed near King and Queen's Court House, Va., March 4, 1864. When the civil war broke out he gave up the study of the law, and assisted his father in the ordnance department. He afterward entered the army, and performed distinguished service. Shortly after the battle of Gettysburg he headed a cavalry charge into Hagerstown, where he lost a leg. He was promoted to the rank of colonel, and having recovered from his wound, engaged in a cavalry raid, the object of which was the liberation of the Union soldiers confined in Libby prison and at Belle Isle, in Richmond. Upon this expedition he fell into an ambush and was killed. A memoir of him was written by his father, and revised and republished by his stepmother (Philadelphia, 1872).

DAHLIA, a genus of plants of the great natural order *compositæ*. According to some authorities three, and according to others only two species are known; the best authorities seem to have generally adopted the latter opinion, recognizing the *D. superflua*, with its outer involucre reflexed, and the *D. frustranea*, with its outer involucre spreading, as distinct species; while the *D. variabilis* is a union of both. The plant is a native of Mexico; and the flowers of all the species and varieties are distinguished by the absence of a pappus, and by a double involucre, the outer being many-leaved and the inner consisting of one leaf divided into



Dahlia.

eight segments. Alexander von Humboldt is believed to have been the first to introduce the dahlia into Europe, he having in 1790 sent some of the plants to Madrid. The marchioness

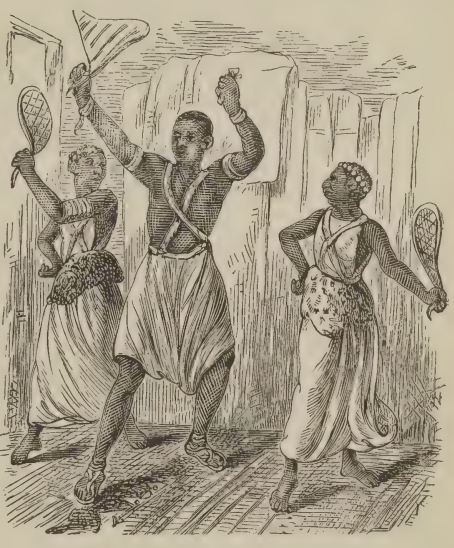
of Bute carried some thence to England to introduce them there; but these were lost, as well as another importation secured by Lady Holland in 1804. Those introduced into France, however, throve there, and from these roots were finally successfully transplanted to England in 1814. They now became favorite plants in many parts of the continent, and they have been cultivated with great care by gardeners everywhere, on account of the ease with which new and beautiful varieties may be produced. Almost any wished-for combination has been made to result from careful propagation, and the varieties are now almost numberless. The roots were formerly considered valuable tubers; but their acrid taste rendered them unpalatable, and cattle refused to eat them. They grow in bunches, and are long and spindle-shaped. The stem of the flower springs from the middle of the bunch. The name *Dahlia* was given in honor of Dr. Dahl, a pupil of Linnæus; but many botanists of continental Europe call the plant *Georgina*, in honor of Georgi, professor at St. Petersburg at the close of the 18th century.

DAHLMANN, Friedrich Christoph, a German historian, born in Wismar, May 13, 1785, died in Bonn, Dec. 5, 1860. He was educated at Wismar, Copenhagen, and Halle, began to lecture at Dresden in 1809, and became professor of history at Kiel in 1812. In 1815 he was appointed secretary of the permanent committee of the Schleswig-Holstein clergy and nobility, and opposed the Danish policy in regard to the duchies. The government in consequence refused to admit him to full standing as a professor, and in 1829 he accepted a professorship at Göttingen. In 1837 he protested against the abrogation of the constitution of Hanover by King Ernest Augustus, and was dismissed from the university with Jakob Grimm, Gervinus, and four other professors, signers of the protest. In 1842 he was appointed professor of history at Bonn, and on the breaking out of the revolution of 1848 he was sent to the Germanic diet by the king of Prussia. He was elected to the Frankfort parliament, and was a member of the committee appointed to draft a new German constitution. His influence in the parliament was exerted in favor of a hereditary German empire, under the king of Prussia as emperor. But Frederick William IV. declined the offered crown, March 28, 1849, and in May Dahlmann and his associates withdrew from the parliament. His subsequent activity in the assemblies at Erfurt and Berlin was less prominent. His most important works are: *Vita Ansgarii*, published in Pertz's *Monumenta Germaniæ Historica; Forschungen auf dem Gebiete der deutschen Geschichte* (2 vols., Altona, 1822–'3); an edition of the *Chronik von Dithmarsen* (2 vols., Kiel, 1827); *Quellenkunde der deutschen Geschichte* (Göttingen, 1830); *Die Politik auf den Grund und das Mass der gegebenen Zustände zurückgeführt* (1835); *Geschichte Dänemarks* (3 vols., Hamburg, 1840–'43); *Geschichte der englischen Revolution* (Leipsic, 1844); and *Geschichte der französischen Revolution* (1845). His biography, by Spingler, was published in 1870.

DAHLONEGA (Indian, *Tau-lau-ne-ca*, yellow money), a town and the capital of Lumpkin co., Georgia, 60 m. N. N. E. of Atlanta; pop. in 1870, 471, of whom 104 were colored. It is built on a hill in the midst of one of the richest gold-mining regions of the state. A branch of the United States mint was established here under authority of the act of congress of March 3, 1835. From 1838, when the first coinage was executed, to Feb. 28, 1861, when its operations were interrupted by the war, 1,381,784 pieces were struck, valued at $6,121,919. The gold of domestic production deposited during the same period amounted to $5,995,495 95, of which $4,310,459 61 was from Georgia. Coinage was not resumed after the war, and in July, 1871, the property was transferred to the North Georgia agricultural college, which held its first commencement in July, 1873. A weekly newspaper is published in the town.

DAHOMEY, a kingdom of Africa, on the west or Upper Guinea coast, between lat. 6° and 8° 45′ N., and lon. 0° 30′ and 2° 30′ E., bounded N. and N. E. by mountain ranges separating it from Yoruba and other territories, E. by Egba, W. by Ashantee, and S. by the gulf of Benin. Its limits are very indefinite, being liable to increase or decrease according to the success of the sovereign in war. Its population is variously estimated from 150,000 to 800,000. The coast, which extends from Cape St. Paul on the west to beyond Badagry, is low and sandy, slopes gradually to the sea, and has a range of islands or sand bars between it and the main ocean. It is indented by two large tide lakes, Denham and Avon, the former at the E., the latter at the W. extremity of the coast line. The island of Badagry lies at the entrance of Lake Denham, between it and the sea. During the greater part of the year, when the S. W. winds prevail, landing on the coast is attended with great difficulties, and can be accomplished only by canoes. There are a number of roadsteads, but Whydah is the only accessible port. The largest river is the Zogo, which flows S. E. into Lake Denham. The surface of the country is generally a plain, rising gradually as it recedes from the sea until it reaches the Kong mountains; but it is broken by several chains of hills which form plateaus, and occasionally by steep mountains rising abruptly. One of the most remarkable of these is Mount Gbowelly, in lat. 8° 19′ N., lon. 2° 28′ E., which on some sides is nearly perpendicular. Around Abomey, the capital, which occupies one of the principal plateaus, in lat. 8° N., lon. 1° 20′ E., the country is broken into romantic glens and valleys, shaded by luxuriant trees and musical with running streams and waterfalls. South of Abomey are vast marshes, interspersed with lakes and

streams, and overgrown in parts with mangroves, dwarf palms, and aquatic plants; and smaller marshes are frequent throughout the country. During the rainy season these are inundated and almost impassable. Between the capital and the sea stretch immense forests, in which the trees attain enormous dimensions. In the forests grow many kinds of fruit and flowering trees, including the date palm, cocoanut, and tamarind, the yellow fig and damson, the mango, mimosa, lime, wild orange, acacia, magnolia, and the shea or butter tree. Wild grapes and the banana, plantain, pineapple, guava, and citron abound, and the convolvulus, jessamine, and many parasitical vines grow with a luxuriance unknown out of the tropics. These dense woods are filled with birds of the most beautiful plumage, and many varieties of monkeys, and are the lurking places of wild beasts and venomous reptiles. Lions, leopards, panthers, hyænas, elephants, deer, buffalo, wild sheep, goats, hippopotami, alligators, and boa constrictors of enormous size abound. Bats are numerous and large, particularly the Whydah vampire bat, which frequently measures three feet from tip to tip of wings. Of the domestic animals, oxen are small; sheep, goats, and swine are abundant, the last being of a large and superior kind. Horses are almost unknown. The rivers and lakes furnish plenty of fish, and their banks abound with land tortoises. The seacoast is so infested with sharks that it is dangerous to go into the water. The climate generally is not unfavorable to health. A breeze called the *harmattan* blows for three months in the year, and greatly purifies the atmosphere. Elephantiasis, common to nearly all the Guinea coast, does not exist in Dahomy; but the people are afflicted by a species of hair worm which penetrates the skin and works its way into the muscular tissue. Agriculture is in a primitive condition, but the soil is so fertile that good crops are raised. Along the coast and around the principal towns are farms in a high state of cultivation. Near Whydah most of these farms are in the hands of persons returned from Brazil, who learned something of agriculture there. Draining and manuring are practised, it is said, in the remote interior. Rice is raised to a large extent in the swampy lands, and, together with maize, yams, and the manioc root, which is ground into meal, forms the chief food of the inhabitants. Cotton of good quality grows wild, but not in quantity sufficient for home consumption. Sugar, indigo, tobacco, and spices are raised. Among the vegetable productions peculiar to the country are a variety of millet or Guinea corn, a legume called *calavances* or pea-beans, a kind of ground bean, and a berry said to possess the property of turning bitters and acids sweet. Two field crops are raised annually, the time of sowing being at the equinoxes. With all these advantages of climate and soil, little is raised for export. The manufactures are chiefly cotton cloth, pottery, mats, and rude agricultural tools, knives, and weapons of iron. Cloth is made by a tedious process, the reel being passed through the shed in their looms, from side to side, they having no knowledge of the shuttle. The web is usually about six inches wide, and is woven in strips of blue and red, the only colors used. The native smiths fabricate knives, swords, daggers, and spears from iron obtained at the European factories on the coast, but they are unacquainted with the art of tempering. Workers in the precious metals, which are obtained in the Kong mountains, show considerable skill in the design and ornamentation of trinkets.—The Dahomans are of medium height and slightly built, agile, and good walkers and dancers, but are not very strong. According to Burton, they are cowardly, cruel,



Dahomans—The King's Dance.

and bloodthirsty, noisy and self-conceited, and given to lying, cheating, and drunkenness. The women are plain and masculine, and comparatively large and strong; they perform all the labors of the house and the field, with the assistance of slaves, the sole occupation of the free men in time of peace being hunting and fishing. The dress of the men is a *godo* or T bandage, a pair of short drawers, and a body cloth, 12 ft. long by 4 to 6 ft. broad, worn like the Roman toga. Of the women, young girls and the poorer classes wear nothing but a zone of beads supporting a bandage, and over that a scanty loin cloth called a *do-oo*. The upper classes add an over-cloth, 12 ft. long, passed under the arms and covering the person from the bosom to the ankles. Tattooing is practised to some extent by both sexes, and the men paint themselves in red and white stripes. Polygamy is general, each man hav-

ing as many wives as his means will permit. The head of the family has absolute authority over his wives and children, even to the extent of selling them into slavery; but this power is seldom exercised. Slaves are well treated, and it is generally difficult to distinguish them from members of the family. The Dahomans recognize a supreme deity, but believe that he is too great and too high to trouble himself about human affairs. They therefore pay their worship only to minor deities, all of whom are connected with some material object. The principal deities are ranked in distinct classes. The most important is the snake god, who has 1,000 snake wives. Next come the tree gods, of which the silk cotton (*bombax*) and the poison tree are the most powerful, each with 1,000 wives. A third group are the sea gods, the chief of which is represented at Whydah by a high priest, who ranks as a king and has 500 wives in virtue of his office. Human sacrifices are made to the sea god, the victim being thrown into the water, when he is at once devoured by the sharks. The thunder gods constitute a fourth group. When a person has been killed by lightning, burial is not lawful. The body is laid on a platform and cut up by women, who hold pieces of the flesh in their mouths and pretend to eat them. Besides these superior deities there are hosts of inferior gods. Fetish houses are seen in every direction, and fetish men and women are numerous. These fetishers or priests undergo a regular education in the mysteries of their calling, and speak an esoteric language which none but themselves can understand. Nearly one fourth of all the women belong to this order. One of their chief employments is visiting the world of spirits. It is a general belief that a man when dead takes in the next world the same position that he held in this; so that a king is a king for ever, and a slave never becomes free. When a Dahoman feels unwell, he imagines that his deceased relatives are calling him to join them, and he hires a fetish to communicate with them. The priest covers himself with a cloth, falls into a trance, and on recovering pretends to have visited the other world and delivered the message sent by the sick man. The Dahoman villages and towns are all similar in appearance, architecture being regulated by law. The walls are mud mixed with oyster shells to strengthen it, and built up in regular courses, each about 2½ ft. thick. No walls are permitted to be more than four courses high. The sun soon bakes the mud hard, and but for the heavy rains it would be very lasting. There are no windows, but the roofs, made of grass and leaves fastened on a light framework, can be raised for the admission of light and air. At almost every door stands the *legba* pot, a common clay shard, which is filled morning and evening with cooked maize and palm oil for *akrasu*, the turkey buzzard, which like the snake is regarded with the utmost reverence.—The government of Dahomey is a pure despotism. There are two kings properly, the city king and the bush king, each having his throne, court, army, officers, and customs. The bush king regulates tillage and commerce; the city king rules the cities, makes war, and manages the slave trade. The former is seldom seen excepting by those who visit the interior for the express purpose. His palace is about six miles from Abomey. The city king has a palace in Abomey and a country residence at Kana, an interior town of about 4,000 inhabitants, 57 m. N. of Whydah. The city king is the only one generally known to Europeans, as he alone comes in contact with the traders. He has entire control over the lives and liberties of his subjects, who invest him with the attributes of deity. None ever attempt to resist his sanguinary decrees, but each considers himself favored if permitted to sacrifice his life to the king's pleasure. In approaching him they prostrate themselves flat on the face and crawl on all-fours, kissing the earth and throwing dust on their persons. He is treated like a demigod rather than a man. When he eats or drinks he is shielded from view with umbrellas or extended cloths, while his courtiers fire guns, ring bells, and bend to the ground. If he sneezes, all within hearing burst into shouts of benediction. When a message is sent to him, it is done in the most circuitous manner, and after passing through a number of inferior officers it is whispered into the king's ear by the *dakro*, a woman attached to the court, who prostrates herself on all-fours. As the life of every man, so the person of every female belongs to the sovereign. Once a year all marriageable girls are required to appear before him. He selects some for his harem, some for his guards, for some he chooses husbands, and others he returns to their parents. The number of the king's wives is indefinite, but he has usually from 3,000 to 4,000. His body guard is composed entirely of women, forming a regiment from 1,200 to 2,500 strong. These are also nominally the king's wives, but are seldom so in reality, though like the members of his harem they are kept in seclusion. They drill in private, and when they go out a bell is rung before them, and all men are compelled to leave the road, or to turn their faces until they have passed. About one third of these amazons have been married; the remainder are maidens. They are strictly chaste, and one who transgresses is usually executed by her comrades. They are more masculine in appearance than the male soldiers, are tall and muscular, and possessed of unflinching courage and ruthless cruelty. To inspire a feeling of emulation, they are allowed to take the scalp of a slain enemy and exhibit it on reviews and public occasions. They also fasten cowry shells with coagulated blood to the butts of their muskets, one being allowed for each man slain. Their ordinary costume is a sleeveless tunic of blue and white native cloth, termina-

ting in a long fringe a little below the waist. From this depends a skirt falling below the knee, and beneath that a pair of short linen trousers. They are poorly armed, some of them having trade guns, but the most being furnished only with bows and arrows, swords, and clubs. Each is provided with a rope to bind prisoners. They are the best fighters in the Dahoman army, the men being comparatively feeble and worthless. The chief executioner is the highest court official. All officers are appointed in pairs, so that each may supervise and check the other. No chief is allowed to visit another in his house, and they can speak only in the street. The king's spies are everywhere, and report every proceeding to him. All property belongs to the sovereign, and when a chief dies the king inherits his title and possessions. He sometimes confers them on the son, but oftener on a stranger, who is obliged to support the family of the deceased. Taxes are levied on all goods exposed for sale in the markets, and a capitation tax is imposed on all in proportion to rank and income. The principal part of the revenue is derived from duties on the palm oil and ivory exported, and an *ad valorem* duty on all imports. The circulating medium is cowries. Every spring the king makes a raid on some of the neighboring tribes, and when successful returns in two or three months with long lines of prisoners. In the days of the slave trade the greater part of these, after some had been slaughtered publicly, were sold to the European traders, who were summoned to Abomey, then the great slave market. These raids are still kept up, although the slave trade is virtually extinct on the west coast. When the king dies, his successor provides himself as soon as possible with a sufficient number of victims, and then proceeds to celebrate the "grand custom," in which as many as 500 are slain to replenish the household of the dead, those slain being supposed to rise in the next world with the deceased and to become his attendants and companions. Besides the grand custom, annual customs also are celebrated, in which usually 60 or 80 are killed to carry news to the dead. The king whispers in the ear of each the message he desires him to convey, and the victim is then decapitated by the appointed official. The executions are attended by crowds of both sexes, frenzied with rum and excitement, who exhibit their loyalty to their sovereign by yells of welcome and by drinking the blood of the slain. After decapitation the bodies of the victims are dragged out of the town and left to be devoured by wolves and vultures. The skulls are cleaned and used as ornaments for buildings and public places. Walls are edged with skulls, they are stuck upon poles, are used as the heads of banner staves, are heaped up before the king, and the temples are almost entirely built of them. On the last day of the customs a line of soldiers stationed all the way from Whydah to Abomey transmit a rolling fire of musketry from the capital to the port and back again.—The history of Dahomey, as known to Europeans, begins early in the 17th century, when the Dahomans were called Foys and possessed a small tract of country in the interior near Abomey. In 1625 a chief of this tribe conquered Abomey and made it his capital. In the early part of the 18th century Guadja Trudo, an ambitious king, subdued Ardrah and Whydah, and extended his sovereignty to the coast. He opened a trade with Europeans, but had frequent quarrels with them, and finally destroyed the French, English, and Portuguese factories, and hung the English governor. He was succeeded in 1732 by his son Bossa Ahadee, whose first act of sovereignty was to put to death all persons named Bossa in the kingdom, as a punishment for their presumption in bearing his name. He died in 1774, and was followed by a succession of savage rulers, who committed shocking atrocities to supply the slave trade. About the beginning of this century the king of Dahomey ruled over a large part of the Guinea coast, but since the suppression of the slave trade he has gradually declined in importance. In 1850 and 1851 King Ghezo made expeditions against Abbeokuta, the capital of the Egbas, but was defeated and lost many of his amazons. In November, 1851, a British consul was fired upon at Lagos, while trying to negotiate a treaty for the abolition of slavery. Two months after a strong force attacked and captured the town, which was well fortified and defended by 5,000 men, and destroyed 57 guns. A treaty was then signed prohibiting the slave trade, abolishing human sacrifices, and securing the freedom of commerce and the liberty to diffuse Christianity. The British have since held the place. In 1858 King Ghezo was succeeded by his son Gelele, who, after subjugating several of the smaller tribes, led an expedition in 1861 against Abbeokuta, but was obliged to abandon it on account of sickness in his army. In December, 1862, a mission was sent to him by the British government with a view to induce him to repress the interior slave trade and to modify the barbarities of the customs, but with little effect. In 1864 he again marched against Abbeokuta with a force of 10,000 or 12,000 men, besides his amazons, and three brass guns. The Egbas routed his army, killed 1,000, and took several thousand prisoners. This disaster was a severe blow to his power, and even threatened the existence of the Dahoman kingdom. The annual losses by war and diseases incident to it, and the loss of reproduction by so large a body as the amazons and the king's superfluous wives, have seriously affected the country. Tracts which were formerly cultivated are now a desert, and the population is but a fraction of what the territory might support.

DAIRY. See Butter, Cattle, and Cheese.

DAISY, or **Day's Eye** (*bellis perennis*, Linn.), a little perennial plant, native of Europe, and better known in its varieties than as a species. It was formerly employed for edgings to bor-



Daisy (Bellis perennis).

ders. In a wild state, the flower is borne upon a long slender peduncle. The florets or petals are numerous, narrow, white tipped with a slight stain of crimson, in a single row around the central florets of the disk. By cultivation it has become very double or multiplex, and has run into many curious and beautiful varieties. Of these the hen and chickens (*prolifera*) is the most singular, where the main flower heads are surrounded by several smaller flower heads. Besides this, the older sorts were the large double and the double quilled, the latter a deep rich crimson, with globular heads, and mostly cultivated as a pot plant. Of late years

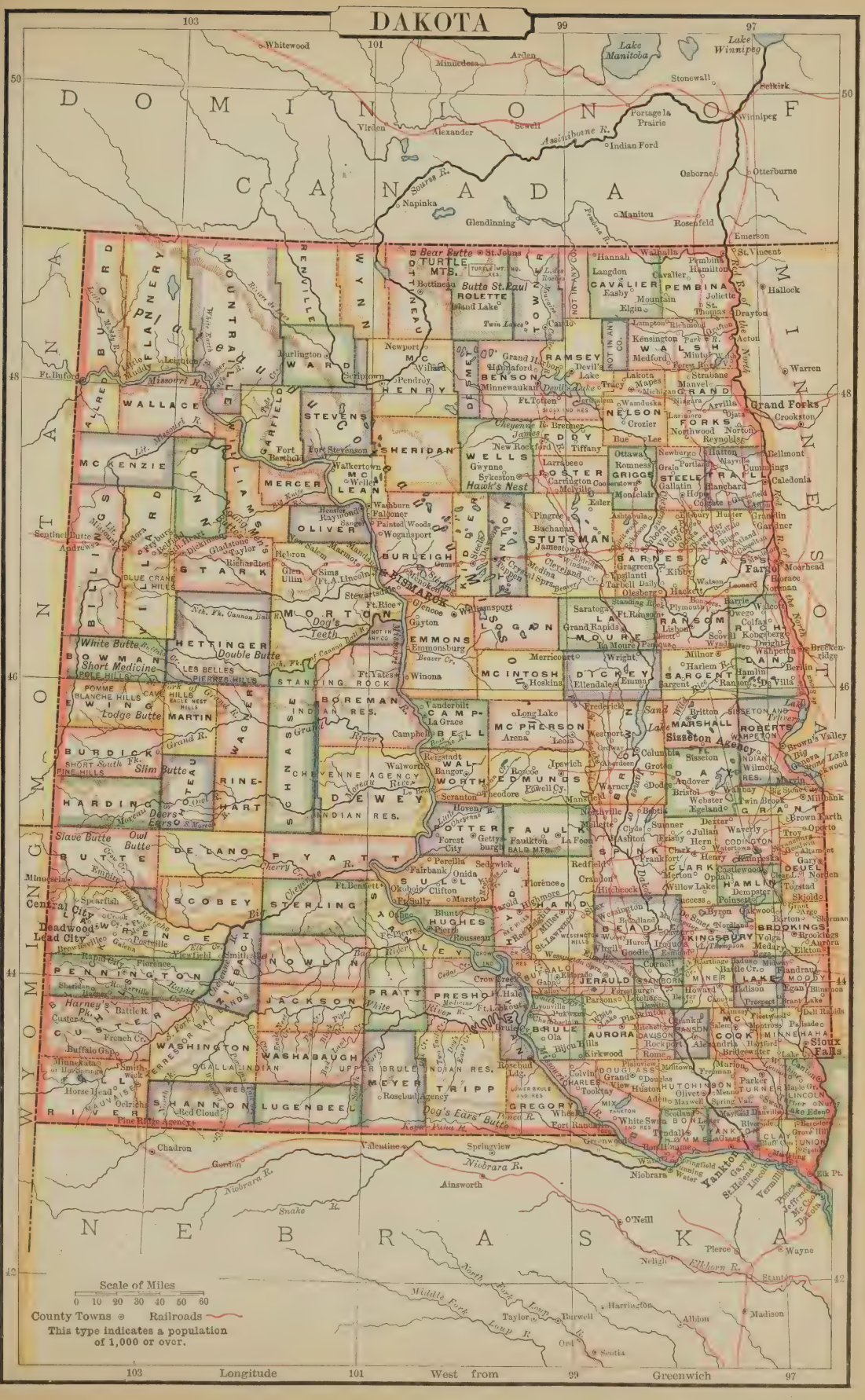


Ox-Eye Daisy (Chrysanthemum leucanthemum).

considerable attention has been directed to raising new sorts of diverse hues. Division of the plants, which make numerous offsets, is an easy and practicable mode of propagation.

—The ox-eye daisy (*chrysanthemum leucanthemum*), is a plant which abounds in the fields both of England and the United States. It is sometimes called daisy, but more properly ox-eye daisy or whiteweed. It is perennial, with a stem about 2 ft. high, bearing numerous large flowers with white rays and a yellow disk. It propagates with great rapidity, and when it gets possession of grass land is difficult to eradicate.

DAKOTA, a territory of the United States, lying between lat. 42° 30′ and 49° N., and lon. 96° 20′ and 104° W., bounded N. by British America, E. by Minnesota and Iowa, S. by Nebraska, and W. by Wyoming and Montana territories; average extent N. and S. nearly 450 m., E. and W. 350 m.; area, 150,932 sq. m. Most of the territory W. and S. of the Missouri river is unorganized. The rest is divided into 83 counties, viz.: Armstrong, Ashmore, Beadle, Bonhomme, Boreman, Bottineau, Bramble, Brookings, Buffalo, Burbank, Burchard, Burleigh, Campbell, Cass, Cavileer, Charles Mix, Clark, Clay, Cragin, Davidson, Deuel, Douglas, Edmunds, Faulk, Foster, French, Gingras, Grand Forks, Grant, Greeley, Gregory, Hamlin, Hand, Hanson, Howard, Hughs, Hutchinson, Hyde, Kidder, Kingsbury, Lake, Lamoure, Lincoln, Logan, Lyman, McCook, McHenry, McPherson, Mercer, Meyers, Mills, Miner, Minnehaha, Moody, Morton, Mountraille, Pembina, Pratt, Presho, Ramsey, Ransom, Renville, Richland, Rolette, Rusk, Sheridan, Spink, Stanley, Stevens, Stone, Stutsman, Sully, Thompson, Todd, Tripp, Turner, Union, Wallette, Walworth, Wetmore, Williams, Wood, and Yankton. The oldest counties lie in the E. part along the Minnesota border, and in the S. E. along the Missouri river. The only considerable town is Yankton, the capital, situated in the S. E. corner of the territory, on the Missouri river, and having a population in 1870 of 737. According to the census, the population of the territory in 1860 was 4,837, of whom 2,261 were Indians not sustaining tribal relations; in 1870, 14,181, which includes 94 colored persons and 1,200 Indians. There were 5,234 male citizens of the United States 21 years old and over. Of the population in 1870, 9,366 were native and 4,815 foreign born. Of the natives, 2,088 were born in the territory, 1,273 in New York, 1,044 in Iowa, 677 in Pennsylvania, 638 in Illinois, 635 in Ohio, 607 in Wisconsin, and 361 in Minnesota. Of the foreigners, 1,179 were born in Norway, 906 in British America, 888 in Ireland, 563 in Germany, and 380 in Sweden. There were 945 persons, excluding Indians, 10 years old and over, unable to write, of whom 727 were more than 21 years of age; 1,144 children attended school during the year. The greater portion of the white population are in the S. E. part of the territory along the Missouri river; they are chiefly engaged in agriculture. The tribal Indians number about 29,000, including 26,216 Sioux, 735 Poncas, and 2,200 Arickarees, Gros Ventres, and Mandans. There are 2,000 Yankton Sioux on a reservation


DAKOTA
DOMINION OF CANADA
NEBRASKA
WYOMING
MONTANA
MINNESOTA
Scale of Miles
0 10 20 30 40 50 60
County Towns
Railroads
This type indicates a population of 1,000 or over.
Longitude West from Greenwich
103
101
99
97

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of 400,000 acres in the extreme S. part, E. of the Missouri river; the Sisseton and the Wahpeton Sioux are gathered on two reservations, one of 1,241,600 acres at Lake Traverse, occupied by 1,496 Indians, and one of 345,600 acres at Devil's lake, occupied by 720. The Unkpapa, Blackfeet, Lower Yanktonai, Upper Yanktonai, Sans Arc, Upper and Lower Brulé, Two-Kettle, Minneconjou, and Ogallala bands of Sioux, numbering 22,000 in all, occupy five agencies on a reservation of 25,000,000 acres W. of the Missouri river and N. of Nebraska. The Poncas are on a reservation of 576,000 acres near the confluence of the Niobrara and Missouri rivers; and the Arickarees, Gros Ventres, and Mandans have a reservation of 8,640,000 acres in the N. W. part of Dakota and E. part of Montana.—The territory of Dakota forms to a great extent the watershed of the two great basins of North America, the Missouri and Mississippi rivers and the tributaries of Hudson bay. The general surface of the country E. and N. of the Missouri is an undulating prairie, free from marsh, swamp, or slough, but traversed by many streams and dotted with innumerable lakes. A plateau called the Coteau des Prairies, or Prairie Heights, with an average elevation of 1,450 ft. above the sea, and a breadth of 15 or 20 m., extends for 200 m. from the S. along the E. border; while a similar table land of less height, the Plateau du Coteau du Missouri, occupies the middle and N. portion. The basin of the Red river in the northeast is covered with open grassy plains. In the southwest, near lat. 44° and between lon. 103° and 105°, extending into Wyoming, are the Black hills and Mauvaises Terres, or Bad Lands. The Black hills occupy in both territories an area about 100 m. long and 60 m. wide, or 6,000 sq. m. The base of these hills is 2,500 or 3,000 ft. above the sea, and the highest peaks 6,700 ft. The Missouri river, which is navigable throughout its entire course in Dakota, traverses the territory from the N. W. to the S. E. corner. Its largest tributary is the Yellowstone, which flows N. E. through Montana and joins the Missouri on the border of the two territories, in lat. 48°. The other chief western tributaries are the Little Missouri, which is formed near the W. central boundary by the confluence of the Box Elder and Thick-Timbered rivers, and has a N. E. course; the Big Cheyenne, which is formed by the confluence of its north and south forks near the Black hills, and flows E. to the Missouri near Fort Sully in southern Dakota; the White river, which enters the territory from Nebraska near the S. W. corner, and has a N. E. and E. course; the Niobrara, which, lying mostly in Nebraska, joins the Missouri in Dakota, a short distance W. of Yankton. On the east the most important tributaries are the Dakota or James river, which rises in the vicinity of Minniwakan or Devil's lake in the northeast, and after flowing nearly 400 m. S. unites with the Missouri a few miles below Yankton; and the Vermilion and Big Sioux, which have a S. direction in the S. E. portion of the territory, the latter forming a portion of the E. boundary, and are each more than 150 m. long. Besides these, there are innumerable smaller affluents on both sides of the Missouri. The Red river of the North, flowing N. into British America, forms the E. boundary for about 250 m. It is navigated by the Hudson bay company's steamers nearly 200 m. S. in Dakota to Fort Abercrombie. Flowing into the Red river from the west are eight rivers, varying in length from 40 to 100 m.: Wild Rice, Cheyenne, Elm, Goose, Turtle, Big Salt, Park, and Pembina. The Mouse river enters Dakota from British America, and after a sweep through the N. W. part recrosses the boundary. The country is diversified with a vast number of lakes and ponds, which afford a constant supply of good water. The largest of these, all situated in the E. part, are Lakes Tchanchicanali, Poinsett, Abert, Travers, White Wood, and Big Stone (the last partly in Minnesota). In the N. part is a large body of salt water, 40 m. long and 12 m. in maximum breadth, called Minniwakan or Devil's lake.—No complete geological survey of the territory has yet been made. The formation of the Black hills, as described by Lieut. Warren, is: 1, metamorphosed azoic rock, including granite; 2, lower Silurian (Potsdam sandstone); 3, Devonian; 4, carboniferous; 5, Permian; 6, Jurassic; 7, cretaceous. The existence in this region of gold, silver, iron, coal, lead, salt, and petroleum has been proved; and there are strong indications that Dakota will take high rank as a mining country. Coal has also been discovered on the Missouri river near Fort Rice in great abundance, some of the veins being from 10 to 15 ft. thick. There is an abundance of clay and white marl, excellent for making bricks, on the Big Sioux river. Slate strata and stone quarries are found on the Big Sioux and Dakota rivers. Building stone of good quality abounds on the Dakota, and limestone exists on most of the streams. Oil springs have been discovered in the vicinity of the Black hills. The N. part of the territory contains rich deposits of salt.—The climate is highly favorable to health; the atmosphere is pure and dry, and there is comparatively little rain. Pulmonary diseases are scarcely known. According to the census of 1870, there were 7·8 deaths from all causes to 1 from consumption, and 12·4 from all causes to 1 from pneumonia. While the winters of the north are severe, the climate of the south is mild. Spring opens earlier than in the same latitude further east. Observations made at Fort Clark, lat. 47°, show the mean temperature for the six months beginning with December to have been but 1° lower than at New York city and Pittsburgh. According to recent observations at Yankton by the Dakota historical society, the climate throughout the year was as follows:

MONTHS.	TEMPERATURE.		SNOW & RAIN, INCHES.		Wet days.	Prevailing winds.
	Max.	Min.	Rain.	Snow.		
January	53°	—16°	1¼	7¼	3	N. W.
February	55	—20½	¼	5⅜	2¼	N. W.
March	69	—4	5½	4½	7	W.N.W.
April	77	8	7⅛	3¼	8¼	S. E.
May	89	39	4¼	0	4¼	S.
June	97	69	4¼	0	6	S. S. W.
July	103¼	72	7¼	0	8	S. W.
August	102¼	68	6⅝	0	7	S.
September	93	41	3⅛	0	3¼	S.
October	84	19	4¼	2¼	11¼	N. W.
November	67	29	¼	⅜	2	N. W.
December	49	—18	..	5½	5	N. W.

—The prevailing soil of E. Dakota is a dark calcareous sandy loam, with an intermixture of clay. This loam is mostly from 4 to 6 ft. in depth, and has been found from 15 to 20 ft. It is remarkably fertile. The corn-producing belt, which runs through Ohio, Indiana, and Illinois, extends N. W. through Iowa, up the valley of the Missouri through Dakota. The bottom lands bordering on this great river and its tributaries possess a singularly rich and uniform soil, and furnish extensive and luxuriant meadows. All kinds of grain, fruits, and vegetables usually grown in the middle states yield abundantly in Dakota. Indian corn has yielded 70 bushels an acre, wheat 30 to 50, oats 40 to 75, potatoes 270 to 500, and barley, buckwheat, and other cereals largely. Wild apples, plums, cherries, grapes, and hops grow abundantly along the streams in the Missouri valley. It is believed that tobacco and sweet potatoes can be successfully raised on the warm bottom lands of the south. Dakota possesses remarkable advantages for stock raising. The plains are covered with nutritious grasses, which afford abundant pasturage throughout the year. The climate is specially favorable to sheep, and wool growing promises to be an important industry. The trees, growing mostly on the river borders, are black walnut, oak, elm, ash, poplar, whitewood, maple, pine, box elder, willow, and cottonwood. The Black hills are covered with forests of pine. Vast herds of buffalo, elk, deer, and antelope range over the W. portion. The black bear, wolverene, muskrat, otter, mink, marten, and wolf are found.—According to the census of 1870 the number of acres of improved land was 42,645. The chief productions were 170,662 bushels of wheat, 133,140 of Indian corn, 114,327 of oats, 4,118 of barley, 179 of buckwheat, 50,177 of potatoes, 456 of peas and beans, 13,347 tons of hay, 8,810 lbs. of wool, 209,735 of butter, 1,850 of cheese, and 1,230 gallons of sorghum molasses. There were 2,514 horses, 225 mules and asses, 4,151 milch cows, 2,125 working oxen, 6,191 other cattle, 1,901 sheep, and 2,033 swine. There were also 729 horses and 44,257 cattle not on farms. The cash value of farms was $2,085,265; of farming implements and machinery, $142,612; wages paid during the year, including value of board, $71,156; estimated value of all farm productions, including betterments and additions to stock, $495,657; value of home manufactures, $1,677; of animals slaughtered or sold for slaughter, $22,066; of all live stock, $779,952. Manufacturing industry is yet undeveloped; but there is abundant water power, which, with the advantages for sheep farming, will greatly facilitate the development of woollen manufactures. The Northern Pacific railroad from Duluth, Minn., at the head of Lake Superior, to Puget's sound, Washington territory, is to cross the N. central portion of Dakota. In July, 1873, it was in operation to the Missouri river, in central Dakota, and its extension was in rapid progress. The Dakota Southern railroad connects Sioux City, Iowa, and Yankton, 61 m. The total length of completed railroads in the territory is 255 m. The Dakota and Northwestern, from Yankton N. W. to the Big Cheyenne river (constructed and operated from Sioux City to Yankton by the Dakota Southern company), the Dakota Central, from Yankton N. to a connection with the Northern Pacific, about 280 m., and other lines, are projected.—The government is similar to that of the other territories. The principal executive officers are a governor, secretary, auditor, treasurer, and superintendent of public instruction. The legislature consists of a council of 13 and a house of representatives of 26 members; its sessions are biennial. A chief justice and two associate justices hold the supreme and district courts, which have general jurisdiction. There is no territorial debt; the county and town debts in 1870 amounted to $5,761; taxation not national, $13,867, of which $1,269 was territorial and $12,598 county. The internal revenue collections for 1871 were $7,130. The receipts into the territorial treasury for 1870 were $1,018; disbursements, $927. In 1870 the assessed value of real estate was $1,695,723, personal $1,228,766; total, $2,924,489; true value of real and personal estate, $5,599,752. The legal rate of interest is 10 per cent. per annum; but any rate not exceeding 2 per cent. a month may be legally agreed upon. Education is not neglected. A free school law was passed in 1869, which places the schools under the control of a territorial superintendent of public instruction and county superintendents, and requires a common school to be kept in each district for at least three months in the year. The superintendent reported in 1872 (some counties wanting) the number of districts organized to be 55; teachers, 53; pupils, 1,765; value of school property, $9,010. Teachers' wages vary from $25 to $100 a month. The United States government is providing for the instruction of the Indians at the agencies. There is a free public library at Yankton presented by congress. Ten weekly newspapers are published in the territory. According to the census of 1870, there were 17 religious organizations, having 10 edifices, with 2,800 sittings and property valued at

$16,300.—Dakota originally formed a part of Minnesota territory, which was organized in 1849, being a portion of the Louisiana purchase from France in 1803. In 1854 the territory of Nebraska was formed, comprising a portion of what is now Dakota. The territory of Dakota was organized by act of congress approved March 2, 1861, and included the present territories of Montana and Wyoming. In 1863 the territory of Idaho was erected, comprising all that portion of Dakota W. of lon. 27° from Washington. In 1864 the N. part of eastern Idaho was organized as the territory of Montana; at the same time the S. part, comprising 91,665 sq. m., was transferred to Dakota, thus making the total area of the territory at that date 240,597 sq. m. By act of July 25, 1868, 89,665 sq. m. were taken from Dakota to form the territory of Wyoming, being all of the above mentioned 91,665 sq. m., excepting a triangular tract of 2,000 sq. m. between Montana, Wyoming, and Idaho, bounded N. by lat. 44° 30′ N., E. by lon. 34° W. from Washington, S. and W. by the Rocky mountains, which has since formed a part of Dakota, though widely separated from it. The first permanent settlements of whites were made in 1859, in what are now the counties of Clay, Union, and Yankton. The first legislature convened March 17, 1862. (See supplement.)

DAKOTA. **I.** A S. E. county of Minnesota, bounded N. by the Mississippi, N. W. by St. Peter's or Minnesota river, and S. E. by the Cannon; area, 550 sq. m.; pop. in 1870, 16,312. The surface is nearly level and the soil fertile. The Milwaukee and St. Paul, the St. Paul and Sioux City, and the Hastings and Dakota railroads traverse it. The chief productions in 1870 were 1,435,874 bushels of wheat, 210,286 of Indian corn, 634,806 of oats, 33,877 of barley, 93,387 of potatoes, 22,744 tons of hay, and 457,400 lbs. of butter. There were 5,480 horses, 4,806 milch cows, 5,525 other cattle, 3,065 sheep, and 6,233 swine; 5 flour mills, 3 saw mills, 4 manufactories of furniture, 5 of carriages, 2 of saddlery and harness, 2 of brick, 2 of lime, 4 breweries, and 1 iron foundery. Capital, Hastings. **II.** A N. E. county of Nebraska, separated from Dakota territory on the N. E. and Iowa on the E. by the Missouri river; area, 400 sq. m.; pop. in 1870, 2,040. The surface consists of rolling prairies, bottom lands, and groves of timber. The soil is fertile. The chief productions in 1870 were 56,510 bushels of wheat, 66,255 of Indian corn, 25,835 of oats, 27,450 of potatoes, 11,635 tons of hay, and 69,950 lbs. of butter. The total value of live stock was $206,393. Capital, Dakota.

DAKOTAS, a family of tribes of Indians in North America, lying between the Rocky mountains and the Mississippi, with one tribe and perhaps others to the eastward. Their language has been regarded as approaching the Mongolian more than any other American language. According to their traditions, they came eastward from the shores of the Pacific and encountered the Algonquins near the Mississippi, where the mass of them were held in check. One tribe, the Hochungara, called by the Algonquins Winnebagook (men from the fetid or salt water), pushed through the Algonquins to the shores of Lake Michigan. The Quapaws, called by the Algonquins Alkansas or Arkansas, settled on the Ohio, but were driven by the Illinois down the Mississippi to the region that now bears their name. The other tribes of the family are the Hoha, called by the Algonquins Assiniboin or Stone Sioux, from the rocky nature of their country; the Dakotas proper, called by the Algonquins and French Nadowesioux (whence our word Sioux); the Missouris, Omahas, Poncas, Iowas, Osages, Kansas, Ottoes, Hidatsa or Minnetarees, and Upsarokas or Crows. The Indians of this family in the United States in 1872 were estimated at 59,377; while those in the British possessions numbered at least 1,000.

DALAYRAC, Nicolas, a French composer, born at Muret, June 13, 1753, died in Paris, Nov. 27, 1809. He was destined for the law, but went to Paris in 1774 and devoted himself to music. He wrote an orchestral piece, performed when Voltaire became a freemason in 1778, and another for an entertainment given by Mme. Helvétius in honor of Franklin. He produced many comic operas, including *La dot* (1785), *Nina, ou la folle par amour* (1786), *Azémia, ou les sauvages* (1787), *Deux petits Savoyards* (1789), *Camille, ou le souterrain* (1791), *Maison à vendre* (1800), *Picaros et Diégo* (1802), and *Le poëte et le musicien* (1811).

DALBERG, or **Dalburg,** a family of Germany, formerly so distinguished that, in the last three centuries and a half of the empire, at each imperial coronation the herald was required to proclaim, "Is there no Dalberg present?" whereupon the member of the family who happened to be present stepped forward and was made first knight of the empire. Among its most distinguished members are: **I. Johann,** bishop of Worms, an active promoter of literature and science, born in 1445, died in 1503. **II. Wolfgang Heribert,** the friend of Schiller, and a zealous patron of the German drama, born in 1749, died Sept. 28, 1806. At the time of his death he was state minister in Baden. **III. Emmerich Joseph,** duke and peer of France, son of the preceding, born at Mentz, May 30, 1773, died April 27, 1833. He was ambassador of Baden in Paris, where he became a favorite of Talleyrand and one of the diplomatic agents of Napoleon. Naturalized and raised to the ducal dignity in France in 1810, he exerted himself in 1814 in favor of the restoration of the Bourbons, and attended as French plenipotentiary the congress of Vienna. After the second restoration he was a minister of state. **IV. Karl Theodor Anton Maria,** the last archbishop elector of Mentz and archchancellor of the German empire, born at Herrnsheim, Feb. 8, 1744, died

in Ratisbon, Feb. 10, 1817. He studied at Göttingen and Heidelberg, in 1772 became administrator of Erfurt, and in 1802 archbishop elector of Mentz, an electorate which by the peace of Lunéville had ceased to represent a territorial division of Germany. In compensation he received Ratisbon, Aschaffenburg, and Wetzlar. In 1806, when the empire was dissolved, Napoleon made him prince primate of the Rhenish confederation, and in 1810 grand duke of Frankfort-on-the-Main. After 1813 he lost all his territories. He wrote a number of philosophical and æsthetical works.

D'ALBERTIS, L. M. See supplement.

DALBY, Isaac, an English mathematician, born in Gloucestershire in 1744, died at Farnham, Surrey, Oct. 14, 1824. He was intended by his friends for a cloth worker, but, having fitted himself by the aid of a few mathematical books to be an usher, was employed in that capacity. Going to London in 1772, and being appointed to teach arithmetic in Archbishop Tenison's grammar school, he became known to many men of science, and was employed in making astronomical observations in a building erected for philosophical purposes by Topham Beauclerk. When this establishment was broken up, after being employed in several similar institutions, he became mathematical master of the naval school at Chelsea. In 1787 he assisted Gen. Roy in taking the trigonometric observations for connecting the meridians of Greenwich and Paris, and for two years was occupied in extending the triangulations through Kent and Sussex to the coast. Gen. Roy died in 1790, and the next year Dalby was engaged together with Col. Williams and Capt. Mudge to continue the survey of England. They began by remeasuring the original base line on Hounslow heath, and under their care the triangulation was extended to Land's End. On the formation of the military college at High Wycombe in 1799, Dalby was appointed professor of mathematics in the senior department, and held that office till 1820. He was the author of mathematical papers and reports, and of a "Course of Mathematics" in 2 vols.

DALE, a S. E. county of Alabama, drained by the Choctawhatchee river; former area about 900 sq. m., but a portion has recently been taken to form Geneva county; pop. in 1870, 11,325, of whom 1,797 were colored. The surface is hilly and mostly occupied by pine forests. The soil is sandy and unproductive. The chief productions in 1870 were 225,364 bushels of Indian corn, 49,728 of sweet potatoes, 41,391 lbs. of butter, 34,152 of rice, 4,273 bales of cotton, and 29,594 gallons of molasses. There were 1,109 horses, 2,752 milch cows, 5,468 other cattle, 4,716 sheep, and 17,637 swine. Capital, Newton.

DALE, David, a Scottish manufacturer, born at Stewarton, Ayrshire, Jan. 6, 1739, died in Glasgow, March 17, 1806. He was for some time a weaver, then clerk to a silk mercer, and afterward an importer of yarns from Flanders. In 1783, securing the use of Arkwright's spinning patent, he founded the New Lanark mills. Succeeding in this, he coöperated in establishing many other mills, and was interested in cotton manufactures in Glasgow, in the first works in Scotland for dyeing cotton Turkey-red, and in a number of other enterprises, carrying all along simultaneously and with great profit. He became very rich, and was sole agent of the Glasgow branch of the bank of Scotland from its foundation in 1783. He was also very active in many benevolent works, and during the dearths of 1782, 1791–'3, and 1799, he imported ship loads of grain and sold to the poor at prime cost. From 1769 till his death he was the active pastor of a Congregational church organized under his charge, preaching every Sunday; and in 1791 and 1794 he was a magistrate of Glasgow. In 1799 he sold the New Lanark mills to a company mainly controlled by Mr. Robert Owen, who married his daughter.

DALE, Richard, an American naval officer, born near Norfolk, Va., Nov. 6, 1756, died in Philadelphia, Feb. 26, 1826. Appointed in 1776 lieutenant in the Virginia navy, he was captured by the English, and thrown into prison at Norfolk. Here he was induced by the royalists, some of whom were his old schoolfellows, to go over to their side. He embarked upon an English cruiser, and while serving upon it was wounded. Quitting the English service after the declaration of independence, he became a midshipman on board the Lexington, which was captured on the coast of France in 1777 and taken to Plymouth, where her officers and men were thrown into prison. In 1778 Dale with some of the others made his escape, but was recaptured and kept in prison another year. He escaped again and made his way to France, where he joined the squadron under Paul Jones, and was made first lieutenant upon the Bonhomme Richard, Jones's own ship. After the destruction of that vessel in the fight with the Serapis off Flamborough head, Sept. 23, 1779, in which Dale distinguished himself, he continued to act as first lieutenant under Jones, first on the Alliance and then on the Ariel. He arrived in Philadelphia Feb. 18, 1781, and was regularly appointed lieutenant in the navy. He was taken prisoner again the same year on the Trumbull, and exchanged, and during the rest of the war served on letters of marque and in the merchant service. After the war he was appointed captain, and hostilities having been commenced with Tripoli, he was placed in 1801 in command of a squadron and ordered to the Mediterranean. His vigilance was so great that no captures were made by the Tripolitans while he was in command. He returned to the United States in 1802, resigned his commission, and having accumulated a competence spent the rest of his life in retirement.

DALECARLIA, or **Dalarne,** the ancient name of a province of Sweden which corresponded

nearly with the present län of Fahlun or Kopparberg. The word Dalecarlia was formed from Dalkarl (valley man), the inhabitants being so called from the Dal Elf (Valley river), which flows through the district. They are noted for honesty, courage, and hospitality. It was among the mountains of Dalecarlia that Gustavus Vasa took refuge from the Danish king Christian II., and by the aid of the Dalecarlians he was first enabled to make head against Denmark in 1521. The brother of the present king of Sweden bears the title of duke of Dalecarlia.

DAL ELF, a river of Sweden, formed by the union of the Öster and Wester Dal Elf. The former rises in the N. W. corner of the län of Kopparberg, near Norway, and flows S. E., forming in its course Lake Siljan. Part of the course of the Wester Dal Elf is nearly parallel with that of the eastern branch. After their junction, W. of the town of Fahlun, the Dal Elf flows first S. E., and then widening into a succession of lakes flows N. E. to the gulf of Bothnia. It is only navigable by rafts, except near its mouth.

DALGARNO, George, a British philologist, born in Aberdeen about 1627, died in Oxford, Aug. 28, 1687. He was educated in the university of Aberdeen, and for about 30 years taught a grammar school at Oxford. In 1661 he published *Ars Signorum, vulgo Character Universalis et Lingua Philosophica;* but the work by which he is best known in modern times is his "Didascalocophus, or the Deaf and Dumb Man's Tutor," which appeared in 1680. It contains so fully the principles of deaf-mute instruction, though deduced from theory only, that it would not be seriously defective as a handbook at the present day. He was also the inventor of a two-handed alphabet, from which the one subsequently adopted in England for the use of deaf mutes was probably derived. His works have been reprinted and presented to the Maitland club of Glasgow (1 vol. 4to, Edinburgh, 1834).

DALHOUSIE, James Andrew Broun Ramsay, marquis of, a British statesman, born at Dalhousie, near Edinburgh, Scotland, April 22, 1812, died there, Dec. 19, 1860. The earl of Dalhousie, his father, was general in the army, for a time governor of Canada, and commander of the forces in India from 1828 to 1832. The son was educated at Harrow and Oxford, entered the house of commons in 1837 as member for Haddingtonshire, and on the death of his father (March 21, 1838) took his seat in the house of lords. In 1843 Sir Robert Peel made him vice president, and in 1845 president of the board of trade. On the accession of the whigs to office in 1846, he was requested to retain his position. In November, 1847, he went to India as Lord Hardinge's successor in the post of governor general, and entered upon his duties Jan. 12, 1848. The treaty concluded by Lord Hardinge with the Sikh chieftains having been broken by new risings, Lord Dalhousie invaded northwestern India, subjugated the Punjaub, and annexed it permanently to the British empire (1849). Under his administration also, in 1852, Pegu was annexed, and possession was obtained of Oude and several minor districts. Great improvements were effected in all departments of the government. The civil service was thrown open to competition, prison discipline was reformed, cheap and uniform postage was introduced, and numerous railways, an extensive system of telegraphs, and the Ganges canal were constructed. The climate having destroyed his health, Lord Dalhousie resigned in 1855, and was succeeded by Lord Canning. He was raised to the rank of marquis in 1849; appointed warden of the cinque ports on the death of the duke of Wellington in 1852; and rewarded in 1856 with a life pension of £5,000 by the East India company, which he resigned, however, in favor of the sufferers from the sepoy rebellion of 1857.

DALLAS, the name of five counties in the United States. **I.** A S. W. county of Alabama, intersected by Alabama river, which is joined within the county by the navigable river Cahawba and several smaller streams; area, about 890 sq. m.; pop. in 1870, 40,705, of whom 32,152 were colored. It has an uneven surface and a highly productive soil, skilfully and extensively cultivated. The surface rock is rotten limestone. Good water was formerly scarce in many parts of the county, but the deficiency has been supplied by a number of artesian wells, from 200 to 900 ft. in depth. The Selma and Gulf, the Selma, Rome, and Dalton, and the Alabama Central railroads cross it. The chief productions in 1870 were 436,701 bushels of Indian corn, 18,101 of oats, 35,968 of sweet potatoes, 63,122 lbs. of butter, and 24,819 bales of cotton. There were 1,339 horses, 3,406 mules and asses, 2,784 milch cows, 4,511 other cattle, and 7,791 swine; 5 flour mills, 2 saw mills, 1 manufactory of saddlery and harness, 1 of tin, copper, and sheet-iron ware, 1 of gas, and 2 of iron castings. Capital, Cahawba. **II.** A N. E. county of Texas, drained by the forks of Trinity river; area, 900 sq. m.; pop. in 1870, 13,314, of whom 2,109 were colored. Most of the land is fertile, well watered, and plentifully supplied with timber. The chief productions in 1870 were 60,762 bushels of wheat, 557,508 of Indian corn, 104,892 of oats, 25,541 of sweet potatoes, 86,795 lbs. of butter, and 3,834 bales of cotton. There were 12,459 horses, 8,452 milch cows, 22,953 other cattle, 6,057 sheep, and 16,659 swine; 2 saw mills, 1 manufactory of agricultural implements, 1 of tin, copper, and sheet-iron ware, and several flour mills. Capital, Dallas. **III.** A S. central county of Arkansas, bounded E. by Saline river; area, about 700 sq. m.; pop. in 1870, 5,707, of whom 1,751 were colored. A portion of this county has recently been added to Clarke county. The soil is generally productive, and the surface level or moderately uneven. The chief pro-

ductions in 1870 were 124,449 bushels of Indian corn, 14,575 of sweet potatoes, 30,188 lbs. of butter, and 2,505 bales of cotton. There were 839 horses, 1,772 milch cows, 3,116 other cattle, and 11,837 swine. Capital, Princeton. **IV.** A central county of Iowa, traversed by Raccoon river and Beaver creek; area, 576 sq. m.; pop. in 1870, 12,019. The soil is good. Coal is found. The Chicago, Rock Island, and Pacific, and the Des Moines Valley railroads cross it. The chief productions in 1870 were 240,004 bushels of wheat, 939,609 of Indian corn, 91,884 of oats, 38,012 of potatoes, 16,724 tons of hay, 201,368 lbs. of butter, and 32,196 of wool. There were 4,139 horses, 3,323 milch cows, 4,887 other cattle, 8,778 sheep, and 10,370 swine; 5 saw mills, 2 flour mills, and 2 manufactories of carriages and wagons. Capital, Adell. **V.** A S. central county of Missouri, intersected by the Niangua river, an affluent of the Osage, and drained by several small streams; area, 576 sq. m.; pop. in 1870, 8,383, of whom 89 were colored. Water power is abundant and valuable. Most of the surface is occupied by prairies and forests. The soil is good, but better adapted to grazing than to the cultivation of grain. The chief productions in 1870 were 57,659 bushels of wheat, 290,388 of Indian corn, 79,698 of oats, 14,810 of potatoes, 66,894 lbs. of butter, and 19,554 of wool. There were 3,202 horses, 2,167 milch cows, 4,165 other cattle, 9,668 sheep, and 10,617 swine. Capital, Buffalo.

DALLAS, Alexander James, an American statesman, born in the island of Jamaica, June 21, 1759, died at Trenton, N. J., Jan. 14, 1817. He was educated in London, studied law, married in 1780, and went to Jamaica, where he remained till 1783, when he removed to the United States. Admitted in 1785 to the bar in Pennsylvania, he commenced practice at Philadelphia. He prepared "Reports of Cases ruled and adjudged in the Courts of the United States and of Pennsylvania before and since the Revolution" (4 vols., 1790–1807). He also wrote for various periodicals, and was engaged in editing the "Columbian Magazine," published in Philadelphia. He was appointed secretary of the commonwealth of Pennsylvania in 1791, 1793, and 1796. While in this office he published an edition of the laws of the state, with notes. On the election of Jefferson as president, he was appointed United States district attorney for the eastern district of Pennsylvania, and held that office till 1814, when he was appointed secretary of the treasury by President Madison. At that time the war with Great Britain was in progress, and the government was financially embarrassed. Mr. Dallas was interrogated on the part of the committee of ways and means as to the best mode of providing the money required and sustaining the public credit. In reply, he made a report which was remarkable for its ability in grappling with the difficulties encountered. He was of opinion that the money required could not be raised exclusively by taxation, but that it must be obtained in part by loans, and recommended the establishment of a national bank for the purpose of obtaining it. The house having in committee of the whole reported (Oct. 24, 1814) in favor of such a bank, Mr. Dallas was again interrogated as to the probable effect of a large issue of treasury notes. His reply had great influence in restoring public confidence and rousing the spirit of the nation. His administration of the treasury department was able and energetic. When he was appointed treasury notes were taken with reluctance; within a few months from that time they were sold at par with interest added. In March, 1815, Mr. Dallas, in addition to the duties of secretary of the treasury, assumed those of secretary of war, among which was the superintendence of the reduction of the army, consequent on the return of peace. In November, 1816, he resigned his office, and intended to resume the practice of his profession, but died a few weeks afterward.

DALLAS, George Mifflin, an American statesman, son of the preceding, born in Philadelphia, July 10, 1792, died there, Dec. 31, 1864. He graduated at Princeton college in 1810, studied law with his father, and was admitted to the bar in 1813. Albert Gallatin having been appointed in that year one of the commissioners to negotiate a treaty of peace, Mr. Dallas accompanied him as private secretary to St. Petersburg and in 1814 to Ghent, whence he returned to the United States with despatches. After assisting his father for some months in the treasury department, he entered upon the practice of his profession in Philadelphia, and became solicitor of the United States bank. In 1817 he was appointed deputy attorney general for Philadelphia county. He was elected mayor of Philadelphia in 1828, and resigned that office the next year to become United States district attorney. In 1831 he was elected by the democrats to fill a vacancy in the United States senate, where he advocated a protective tariff and the recharter of the United States bank. His term of office expired March 4, 1833, and he then became attorney general of Pennsylvania, and held the office till 1835. In 1837 he was appointed minister to Russia, and was recalled at his own request in 1839, when he resumed the practice of law. He was elected vice president of the United States in 1844, Mr. Polk being elected president. Although Mr. Dallas had been understood to be a protectionist, the senate being equally divided on the free-trade tariff of 1846, it became a law by his casting vote in its favor. His term of office as vice president expired March 4, 1849. In 1856 he succeeded Mr. Buchanan as minister to England. The most important questions that arose while he was minister were those which related to Central America, and to the request made by

the United States for the recall of Sir John Crampton, British minister to the United States. Both these questions were amicably settled. In 1861 he was succeeded as minister by Mr. Charles Francis Adams, and retired to private life. During the civil war he strongly supported the cause of the Union.

DALLAS, Robert Charles, a British author, brother of A. J. Dallas, born at Kingston, Jamaica, in 1754, died at St. Adresse, Normandy, Oct. 21, 1824. He was educated at Kensington, England, entered the Inner Temple as a law student, and returned to Jamaica in 1775, where he remained three years, after which he took up his residence in England. His sister having married Lord Byron's uncle, Byron and he became friends, and it was by his advice that "Childe Harold" was published, Byron giving him the £600 which he received for the copyright. After Byron's death he prepared for the press "The Private Correspondence of Lord Byron," but was restrained from its publication by an injunction obtained by Byron's executors. He however prepared his "Recollections of Lord Byron," which was published posthumously. Among his publications are: "Miscellaneous Writings" (4to, 1797); "Annals of the French Revolution," from the French of Bertrand de Moleville (9 vols. 8vo, 1800–'2); "The History of the Maroons" (2 vols. 8vo, 1803–'4); "Aubrey," a novel (1804); "The Morlands, Tales illustrative of the Simple and Surprising" (1805); "The Knights, Tales illustrative of the Marvellous" (1808); "The New Conspiracy against the Jesuits" (1815); and several translations from the French.

DALL' ONGARO, Francesco, an Italian poet, born at Oderzo, Venetia, in 1808, died in Naples, Jan. 10, 1873. He completed his studies in Padua and took orders; but his sermons being regarded as too independent, his preaching was interdicted. Subsequently he became a journalist at Trieste. His drama *Fornoretto* and two other plays appeared in 1838. He was expelled from Trieste in 1847 for some political remarks at a banquet in honor of Cobden. Afterward he lived in the principal Italian cities, and acquired celebrity by his hymn *Il ritorno del tricolore.* He left Rome for Venice in March, 1848, having declined to edit the official organ of Pius IX., became one of the leaders of the Venetian movement, and founded a journal, *Fatti e non parole.* He aided in organizing the Garibaldi legion in Rome, and became a member of the constituent assembly. On the capture of Rome by the French he went to Ancona, and subsequently to Switzerland, whence he was expelled in 1852, and spent four years in Belgium, where he repeated the lectures upon Dante which he had formerly given in Trieste. He afterward wrote for newspapers and periodicals in Paris, and was only saved by the intervention of an influential French official from expulsion at the time of Orsini's attempt upon the life of Napoleon. In 1859 he returned to Italy, and subsequently became professor of literature in Milan and in Naples. He achieved a high reputation as author of tales, novels, poetry, and dramas, and of a work on dramatic literature. His *Novelle nuove e vecchie,* containing sketches of Italian life, has passed through several editions. In 1865 some of his tales were translated into French by Caroline Cornan, under the titles of *Le palais des diables* and *Fanny.*

DALMATIA, a crownland with the title of kingdom in the Cisleithan half of the Austro-Hungarian monarchy, forming a narrow coast strip along the E. shore of the Adriatic, W. of the Dinaric Alps, which form its frontier toward Turkey, and embracing a large number of islands, mostly close to the coast. It lies between lat. 42° 10′ and 44° 55′ N., and lon. 14° 30′ and 19° E., and is the southernmost province of Austria; area, 4,940 sq. m.; pop. in 1871, 449,253, of whom 87 per cent. are Slavs, and about 13 per cent. Italians. Capital, Zara. The Roman Catholic religion is predominant; the non-united Greek church numbered in 1869 78,305. The formation of the frontier mountain chain (rising to a height of 6,000 ft.), which has a picturesque and rugged outline, is of limestone with many mammoth caves, not perfectly explored, and subterranean lakes and rivers; but the surface is dry and bare, the rivers and lakes drying up during the summer, and leaving the inhabitants nothing to drink but cistern or marsh water. The slope is sudden, the rivers descending in cataracts; the few fertile valleys are narrow. The coast consists of bold promontories with deeply indented bays, before which a series of long and narrow rocky islands stretch in a S. E. direction nearly parallel to the mountains, forming a great number of excellent harbors. The largest of these islands, from N. to S., are Pago, Grossa or Lunga, Brazza, Lesina, Curzola, and Meleda. The climate is mild along the coast, the average temperature being 59° F. at Ragusa, and not severe on the mountains, ice and snow being almost unknown; rains prevail when the *bora,* a northerly winter storm, blows, but the average annual fall is only 12 inches at Cattaro and Ragusa, and further north somewhat more. In spite of this, the climate is not very healthy, owing to the swamps along the coast range of mountains. The country might support a far larger population but for the frequent emigrations, and the quarrelsome and indolent habits of the people. Husbandry and the rearing of cattle are neglected, and Dalmatia is less productive than any other dependency of Austria. Ship building is carried on to some extent, from 300 to 400 vessels being built annually, but more than 90 per cent. of them are only small boats for fishing and the coast trade. The aggregate value of imports and exports, inclusive of the transit trade, is estimated at 16,000,000 florins, of which 33 per cent. belongs to the imports by sea, 8½ per cent. to the imports by land, 27½ per cent. to the exports

by sea, 9 per cent. to the exports by land, and 22 per cent. to the transit trade. In 1872 there was no railroad in all Dalmatia. The principal agricultural products are corn, rye, barley, figs, olives, and grapes; but sufficient grain is not produced for the wants of the country, the deficiency being supplied from Hungary and Turkey. Of fruits there are plums, pears, almonds, apples, oranges, lemons, pomegranates, peaches, and apricots. Strong wines are made, but most of them are too sweet, owing to the grapes being left too long on the vines. The country is not rich in metals, although in ancient times it produced gold. Iron and coal mines are wrought, the latter in the district of Dernis, but the coal is of an inferior quality. The manufactures are insignificant, consisting chiefly of a kind of rough cloth, cotton and woollen stuffs, ropes, twine, leather, and felt. The soil is well suited to the growth of the mulberry, but little silk is produced. Spirits and liquors are distilled, of which maraschino is the most celebrated. Physically the Dalmatians are a fine race, tall, of regular features and dark complexion, and make excellent soldiers, particularly the Morlaks, who live in the interior. They are also daring sailors, and constituted the strength of Venice in the middle ages. The violent storms and the perilous navigation in the Dalmatian archipelago develop their vigor and skill. They love liberty and independence, and have almost always successfully withstood the aggressions of the Turks. The language of the Slavic inhabitants is a dialect of the Illyrico-Servian, which differs but slightly from those spoken by their neighbors in Croatia, Bosnia, Herzegovina, and Montenegro. Education is much neglected. Only 28 per cent. of the children of school age attend school. Dalmatia was formerly divided into the four districts of Zara, Spalato, Ragusa, and Cattaro; at present (1873) into 12 districts, exclusive of the city of Zara. The Dalmatian diet consists of the president of the diet, the Catholic archbishop, one Greek oriental bishop, and 27 deputies. The Turkish portion of the ancient domain of Dalmatia forms the present province of Herzegovina. — The Romans subjugated Dalmatia, after a struggle of nearly 100 years, under Augustus; and under Diocletian it was one of the most flourishing portions of the empire, he having his residence at Spalato, then a small place near the capital, Salona. In the division of the Roman empire, it was allotted to the eastern half, forming a district of Illyricum. The Slavic race (Slavonians, Croats, and Serbs) took possession of it about 600, when the great Germanic migration had scarcely left a trace of the ancient inhabitants. The N. portion of the country was conquered by the Hungarians in the 11th century, and the southern (Herzegovina) surrendered itself to the protection of Venice, which however could not prevent Dalmatia from being conquered in the 16th century by the Turks, who restored most of it to the republic only after long struggles, by the peace of Passarowitz (1718). By the treaty of Campo Formio (1797) Austria came into possession of the Venetian portion, and has since ruled Dalmatia with the exception of the period 1805–'13, when it was under the sway of Napoleon, who strove to develop its resources for a navy, and who conferred the title of duke of Dalmatia upon Soult. Austria has begun to increase its commercial prosperity; she has established a naval academy at Spalato, and tried to deepen several harbors and encourage ship building. In October, 1869, a serious insurrection broke out in Dalmatia. The rural inhabitants of the district of Cattaro had resisted the execution of the military law, and formed a large band of armed men, and it was reported that they received heavy reënforcements from Montenegro and Herzegovina. For several weeks they successfully kept the Austrian army at bay, but finally were totally defeated at the battle of Lisio, and submitted in December.

DALMATICA, a sacerdotal vestment in the Roman Catholic church, distinctive at present of deacons and subdeacons. Originally it was borrowed by the Romans from the Dalmatians, and appears to have been an ample flowing vestment descending to the heels, with wide sleeves which reached to the elbows. It was at first, as a garment of barbarian origin, looked upon with disfavor; and when Commodus and Heliogabalus appeared with it in public, the people manifested their displeasure. In the 2d century, however, it came into favor, and was worn by bishops, priests, and deacons. St. Cyprian was clothed in a dalmatica when he set out for the place of his execution. At a very early period it was worn by the popes in public functions. John the Deacon mentions the dalmatica of Gregory the Great. Subsequently it became the appropriate vestment of deacons and subdeacons when assisting the priest at the altar. Popes and bishops when they celebrate pontifical mass still wear the silken dalmatica over the alb and beneath the chasuble. Its color originally was white; but it soon came to be adorned with two purple bands extending from the shoulders the whole length downward before and behind. As worn at present, it is open at the sides, with a hole in the middle for the head; and of the wide sleeves only the upper part covering the arms to the elbows remains. The French make it of very stiff cloth; but the Catholics of other countries make it of more graceful shape, and of silk like the chasuble.

DALRYMPLE, the name of a Scottish family which rose into importance about the beginning of the 15th century. The following are its most eminent members. **I. James,** Viscount Stair, born in Drummurchie, Ayrshire, in May, 1619, died Nov. 25, 1695. He received his education at the university of Glasgow, and in his 22d year, while holding a captain's commission in the army, was appointed professor

of philosophy. He was admitted in 1648 an advocate at the Scottish bar; was secretary of the commissions sent in 1649 and 1650 to treat with Charles II., then an exile in Holland; and in 1657 was appointed by Cromwell one of the "commissioners for the administration of justice." After the restoration he was appointed by Charles II. one of the new lords of session, but resigned office in 1663, from an unwillingness to take the declaration against the national covenant of 1638 and the solemn league and covenant of 1643, appended to the oath of allegiance. The king refused to receive his resignation, and made him a baronet. In 1671 he became lord president of the court, but in 1681 he refused to take the new test oath, and was obliged to resign. In the same year he published his "Institutions of the Law of Scotland," a work holding the same rank in Scotland that Blackstone's "Commentaries" does in England. In 1682 persecution from government compelled him to take refuge in Holland, where he prepared for publication his decisions, and published in 1686, at Leyden, a Latin treatise entitled *Physiologia Nova Experimentalis*. He accompanied the prince of Orange to England, was reappointed to the presidency of the court of session, and was elevated to the peerage as Viscount Stair. **II. John,** earl of Stair, son of the preceding, an advocate at the Scottish bar, and secretary of state for Scotland, died in 1707. He was created an earl in 1703. His complicity in the Glencoe massacre has given an unenviable notoriety to his name. After a full inquiry the Scottish parliament pronounced him the original author of the massacre, but failed to impute to him such criminality as would affect his life or his estate. **III. John,** earl of Stair, son of the preceding, born in Edinburgh, July 20, 1673, died there, May 9, 1747. He entered the army at the age of 19, and served with great distinction under Marlborough. On the accession of George I. he was appointed commander-in-chief of the forces in Scotland, and for several years was ambassador in France. Subsequently he lived many years on his estates, and was the first in Scotland to plant turnips and cabbages in open fields. In 1742 he was sent as ambassador to Holland, and was afterward made commander-in-chief of the forces in Great Britain. **IV.** Sir **David,** better known as Lord Hailes, an eminent lawyer and antiquary, great-grandson of the first Viscount Stair, born in Edinburgh, Oct. 28, 1726, died Nov. 29, 1792. He was educated at Eton, studied the civil law at Utrecht, and in 1748 was admitted an advocate at the Scottish bar. In 1766 he was made a judge of the court of session, under the title of Lord Hailes. Ten years later he was appointed a lord of judiciary, which position he held until his death. His publications, 48 in number, exclusive of articles in reviews and magazines, commence with the year 1751 and extend to 1790. The first was a volume of paraphrases and translations from the Scriptures, by various authors; which was followed by the publication, with ample notes and illustrations, of a variety of memorials and original letters, throwing light upon the history of England and Scotland. In 1769 he produced a historical memoir of the provincial councils of the Scottish clergy, and "Canons of the Church of Scotland, drawn up in the Provincial Councils held in Perth, in the years 1242 and 1269;" and in the succeeding year a collection of old Scottish poems from manuscript, with many curious illustrations. In 1773 appeared his "Remarks on the History of Scotland," and in 1776–'9 his "Annals of Scotland" from the time of Malcolm Canmore to the accession of the Stuarts, his most popular and useful work. In 1776 he published an account of the Christian martyrs of Smyrna and Lyons in the 2d century; which was succeeded, in continuation of the subject, by the two volumes of "Remains of Christian Antiquity." In his "Disquisitions concerning the Antiquity of the Christian Church," he combated many of the hypotheses of Gibbon regarding the origin and progress of Christianity. "An Inquiry into the Secondary Causes which Mr. Gibbon has assigned for the rapid Growth of Christianity," published in 1786, was a more elaborate development of his ideas upon the same subject. **V. Alexander,** brother of the preceding, born at New Hailes, Scotland, July 24, 1737, died in London, June 19, 1808. He entered the East India company's service at the age of 16, and for many years was hydrographer to the company. His published works number about 60, and include a wide variety of subjects, though the greater part are devoted to Indian affairs. He also prepared charts of the eastern seas.

DALTON, a town and the capital of Whitfield co., Georgia, about 80 m. N. N. W. of Atlanta, at the intersection of a branch of the East Tennessee, Virginia, and Georgia railroad with the Western and Atlantic and the Selma, Rome, and Dalton lines; pop. in 1870, 1,809, of whom 439 were colored. It is beautifully situated in a valley environed by mountains, and has an extensive trade in grain. It was an important position in Gen. Sherman's advance upon Atlanta. It was occupied by the confederate forces under Gen. Johnston during the winter of 1863–'4, and strongly fortified, but was evacuated by them, May 12, 1864, in consequence of a flank movement of the federals, which threatened Resaca.

DALTON, Edward Barry, an American physician, brother of Prof. J. C. Dalton, born in Lowell, Mass., Sept. 21, 1834, died at Santa Barbara, Cal., May 13, 1872. He graduated at Harvard college in 1855, and at the New York college of physicians and surgeons in 1858. After serving as medical officer of a gunboat in 1861, he was commissioned regimental surgeon of volunteers, and subsequently became medical inspector of the 6th army corps. In 1863 he was acting medical director of the army

of Virginia. Transferred to the army of the Potomac, he followed it through the campaign of 1864, having charge of all the wounded, and establishing and moving the hospitals as circumstances required. The number of patients thus under his charge from May, 1864, to March, 1865, was more than 100,000. From the latter date he was medical director of the 9th army corps until the close of the war, when "for faithful and meritorious services" he received the rank of colonel of volunteers by brevet. From March, 1866, to January, 1869, he was sanitary superintendent of the New York board of health. He visited California three years later, for the improvement of his health, and died there. His published works are: a treatise on "The Disorder known as Bronzed Skin, or Disease of the Supra-Renal Capsules" ("New York Journal of Medicine," May, 1860); "Reports of the Sanitary Superintendent of the Metropolitan Board of Health" for 1866, 1867, and 1868; and an article on "The Metropolitan Board of Health" ("North American Review," April, 1868).

DALTON, John, an English chemist, author of the atomic theory, and of that of the constitution of mixed gases, born at Eaglesfield, near Cockermouth, in Cumberland, Sept. 5, 1766, died in Manchester, July 27, 1844. With his parents, he belonged to the society of Friends. He received his first instruction at the school of his native village, and in 1781 became usher in a school at Kendal, where he remained till 1793, when he was appointed professor of mathematics and natural philosophy in the New college at Manchester, which was removed to York in 1799. He continued his lessons in private schools for years, occasionally giving lectures on the physical and experimental sciences in neighboring towns and cities. In 1788 he began a series of important meteorological observations, and in 1793 published his first separate work, entitled "Meteorological Observations and Essays." This was one of his favorite pursuits, and he continued to collect and record meteorological observations until his death. In 1794 he gave an account of a singular defect in his own vision which rendered him incapable of distinguishing certain colors; green, red, purple, and blue, all appearing alike to him. He supposed this peculiarity to be due to the color of the retina or of the fluids of the eye; but after his death no abnormal coloration was discovered on dissection. This defect of vision, which is not very uncommon, has sometimes been called Daltonism since the publication of his paper. (See Color-Blindness.) He wrote numerous articles for the "Gentleman's and Lady's Diary," the "Memoirs of the Manchester Society," "Nicholson's Journal," the "Philosophical Magazine," and the "Transactions of the Royal Society of London." In 1801 he published "Elements of English Grammar." In 1802 he wrote six dissertations for the "Memoirs of the Manchester Society," in one of which he unfolded his celebrated theory of the "Constitution of Mixed Gases." The leading feature of this theory is that gases which do not form new chemical compounds act on each other as a vacuum, diffusing themselves among each other by their own elasticity. The greater part of Dalton's experiments were made to ascertain the influence of heat in the production of physical and chemical phenomena; and much of the progress of modern science in this department is due to his researches. Other subjects treated in these papers were "The Force of Vapor of Water and other Fluids at Different Temperatures in the Torricellian Vacuum, and other Atmospheric Pressure," and "The Theory of Evaporation and the Expansion of Gases by Heat." These writings display profound reasoning based on accurate observations, and have rendered great service to pneumatic chemistry and modern investigations on the specific gravity of gases. His celebrity, however, rests mainly on his atomic theory, which he began to work out in 1803, and explained in lectures in 1804. This theory was fully propounded in his "New System of Chemical Philosophy," the first volume of which appeared in 1807, and the second in 1810, followed by a third in 1827. (See Atomic Theory.) In his papers on subjects connected with meteorology, he has left valuable remarks on evaporation, rain, the aurora borealis, winds, and dew. His observations on the latter contain the principles of Dr. Wells's theory of dew, and of Daniell's hygrometer. In 1821 he was elected fellow of the royal society, and in 1826 received a gold medal from that society for discoveries in science. In 1822 he visited France, where he was received with much distinction. In the reign of William IV. the English government gave him a pension of £150 a year, which was subsequently increased to £300.

DALTON, John Call, an American physiologist, born at Chelmsford, Mass., Feb. 2, 1825. He graduated in arts at Harvard college in 1844, and in medicine in 1847. He first attracted attention as an original physiological writer by an essay on the *corpus luteum*, which received the annual prize offered by the American medical association in 1851, and he was appointed professor of physiology in the medical department of the university of Buffalo, where he inaugurated in this country the teaching of physiology with illustrations by vivisection. He resigned this professorship in 1854, and occupied the chair of physiology in the Vermont medical college from 1854 to 1857, and in the Long Island College hospital from 1859 to 1861. In 1854–'5 he gave a course of lectures on physiology in the college of physicians and surgeons in New York, in place of Prof. Alonzo Clark. In 1855 he was appointed to that chair, which he has since filled. His contributions to the literature of physiology have been numerous since 1851. He has published several important articles in the "American Journal of the

Medical Sciences," and has contributed largely to the "Transactions of the New York Academy of Medicine," the "American Medical Monthly," and other medical journals of New York. In 1859 he published a "Treatise on Human Physiology," which immediately became a standard work; and in 1868 a "Treatise on Physiology and Hygiene" for schools, which has been translated into French. In April, 1861, he went to Washington as surgeon to the 7th regiment of the city of New York. He was appointed brigade surgeon of volunteers in August, 1861, and resigned in March, 1864, having filled several important positions in the medical corps. As an original worker in physiology, he is best known by his researches on the corpus luteum, the anatomy of the placenta, the physiology of the cerebellum, intestinal digestion, and the other experimental observations embodied in his treatise on physiology. These, with other original investigations, have placed him in the front rank of living physiologists.

DALY, César, a French architect, born in Verdun in 1809. He is a pupil of Félix Durban, and was employed to restore the cathedral of Albi. In 1840 he founded the *Revue de l'architecture et des travaux publics*, a richly illustrated monthly periodical. In this he has published a plan of a complete Fourierite phalanstery, and in 1855 he made a visit to Cabet's communist colony in the United States. His principal published works are *L'Architecture privée au XIX^e^ siècle sous Napoléon III.* (3 vols. fol., 1860–'64), and *Motifs historiques d'architecture et de sculpture* (46 nos. fol., 1864–'7).

DAM, an obstruction or barrage employed for raising the level of water in a stream, or for excluding it from an enclosure. Structures of the latter kind are called coffer dams, and are used to afford facilities for excavating. Dams for raising the level of water in streams have a variety of purposes, such as furnishing water power to machinery, supplying aqueducts for conveying water to towns or for irrigation, and for effecting slack-water navigation of rivers. The material and construction of a dam will depend upon its object and upon the cross section of the body of water it is intended to restrain. For still and shallow water of not more than 5 ft. depth, where the foundation is firm and comparatively impervious, an embankment of stiff clay, 8 or 10 ft. in breadth, and well rammed, will be sufficient, if a gate is provided to keep the level of the water below the top of the embankment and thus prevent its wearing away. Where the confined water has much depth and breadth at the dam, the construction requires great strength, and therefore must be of materials capable of being firmly joined together and also to the banks of the stream. Stone masonry well laid in hydraulic cement and framework of timber, or the two in combination, are the materials usually employed in the construction of dams of great strength. When dams for slack-water navigation are built upon streams which are subject to heavy freshets, the selection of the site is very important. It is generally advisable to place them where the stream is pretty wide, for the purpose of allowing a ready flow over the dam during high water. If built at a narrow place, the restraint to the outlet would so increase the hydraulic as well as the hydrostatic pressure that great expense would necessarily be incurred in making a structure sufficiently strong and securely joining it to the banks, and in many cases the object could not be accomplished. Sometimes the dam is built in a straight line transverse or diagonal to the current. The diagonal line allows the readiest flow, but the transverse is generally preferable on account of making less disturbance in the bed of the stream below. It may also, for greater strength, be built in the form of an arc with the convex surface toward the current, or it may have two or more straight lines, the angles pointing up stream. In constructing a dam, it must be borne in mind that the pressure of water is in proportion to its depth, but the circumstances not only vary with difference of location, but in the same location in consequence of changes which constantly take place in the current of the stream. Often during a freshet the surface becomes exceedingly rapid, so as to exert great force against the upper part of the dam, and calculations based upon hydrostatic pressure alone would prove erroneous. The rule therefore is to supplement mathematical calculations by a judgment as to the requirements necessary in each particular case, and to make the structure strong enough at every point to withstand whatever force may be brought against it under any possible circumstances. Dams are often built of a framework of timber, a plate resting upon posts which in turn are supported by a sill, reaching across the stream. Upon the plate rafters are laid, one end resting upon the plate and the other reaching up the stream and resting upon the rocky bed or upon another sill. Across the rafters planking is placed of sufficient strength to withstand the hydrostatic pressure, as well as that of the running water. The dam across the Connecticut river at Holyoke, Mass., completed in 1849, is 1,017 ft. long and 30 ft. high. It is formed of square timbers inclined 22° to the horizon, having one end bolted to the rock and the other resting upon a timber framework. From the crest of the dam descends an apron 4 ft. long, which slopes also at an angle of 22°. This dam has withstood the heaviest freshets in the Connecticut river without having given way in any part. The water is delivered by 13 gates to a main canal faced with masonry, 140 ft. wide at bottom, 144 ft. at top, and 22 ft. deep. The motive power afforded by this dam is said to be the best in the United States. The barrage across the river Furens in France, for the primary purpose of forming a reservoir to hold the waters of the river during freshets from inundating the town of St. Étienne, and the

secondary one of supplying it with water, is one of the remarkable pieces of civil engineering of the day. The dam is 164 ft. high, and between the extreme ends at the top, where it is anchored in the rock, the distance is 100 metres or 328 ft. The adjoining diagram, fig. 1, shows a horizontal ground section of the foundation, and also that of the curved upper edge, which is an arc whose chord is 100 metres, and its versed sine 5 metres. The facings of both sides are curved surfaces, calculated as near as possible to allow that breadth of structure which at every point would bear a constant proportion to the strain given by the forces exerted against it. The soil upon which the dam is built is mica schist, and the structure is sunk into the rock at the bottom and sides. In both the excavation was continued until perfectly solid rock was reached. The wall is built of solid masonry, the stone being carefully selected, and not placed in tiers, but so joined as to produce the effect of a monolith, and, with the exception of a small portion at each end, was laid in hydraulic cement. The work was begun in 1858, but it was not till 1865 that it could be tested by a great depth of water. In December of that year the Furens was greatly swollen, and the reservoir was filled to the height of 46 metres, and in the following March to the height of 47 metres. The pressure produced no movement of mass, or escape of water, except a dampness owing to its being forced through the pores of the material by the enormous pressure, which at the depth of 47 metres or 154 ft. was more than 67 lbs. to the square inch, or about 4½ tons to the square foot.—A Coffer Dam is a barrier erected to exclude water from an enclosure, usually for the purpose of allowing excavations to be made. It may be constructed in a variety of ways, and of different materials, depending on the size of the work, the depth of the water, and the material of which the bottom is composed. If it is of clay or similar substance, piles may be driven about the enclosure, in two, three, or four rows, and the intervening spaces filled with gravel and clay. Between the piles of the inner row clay, or if necessary hydraulic cement, may be used, after which the water may be pumped out. (See fig. 2.) If the bottom is of quicksand, the construction of a coffer dam which will allow of much excavation is attended with great difficulty. Such was the case in building the dry dock for the Brooklyn navy yard; the exposure to water, however, was only on one side. For more than 60 ft. below the superstratum of black mud the bottom consisted of an impalpable micaceous sand, which, saturated with water under pressure, flowed like a mobile dense liquid. In this material a pit was to be excavated having an area of over two acres at the top and one at bottom, and a depth of 37 ft. below mean high water. Piles of yellow pine 40 ft. long and 15 in. square were driven in close contact around the outer end of the proposed excavation, the intervals between the rows being 10 or 12 ft. These were filled in with the sand excavated. The piles were held together with oak wales and two-inch tie bolts. This barrier was forced inward by a pressure of less than 10 ft. of water, and when the excavation reached 30 ft. the water came in under the piles and filled the pit. A new and stronger dam was then commenced, and piles from 10 to 15 ft. longer than the first were driven close together in two rows 30 ft. apart, outside of the old work, and the space between filled with gravel and coarse stone. A third row was driven within the old work from 12 to 15 ft. below the proposed level of the foundation, and the space behind filled in with gravel. This dam was retained in place during the progress of the excavation only by the closest attention, although the walls were over 60 ft. thick and contained six rows of piles of timber from a foot to a foot and a half in diameter. When the bottom will not admit of pile driving, a frame of cribwork, lined with planking, made water-tight and loaded with stone, is sunk in position, and any crevices at the bottom are stopped with clay or hydraulic cement or concrete. If a shaft of only a few feet in diameter is required to be sunk into a rock for the purpose of excavating, a coffer dam may be constructed of an iron cylinder, which, having a strong flap of India-rubber sheeting around its bottom, may be made tight by means of weights. As the excavation proceeds, an inner cylinder may be slid down below the surface of the rock, like the slide of a telescope. It is, however, difficult to get and maintain such a piece of apparatus in position in a harbor where moderate waves are liable to be raised. Cribwork which may be weighted to any required degree and floated into position, and sunk by additional weight of stone, will generally be found more practicable. A combination of cribwork and iron cylinder in a coffer dam is represented in the article Blasting.

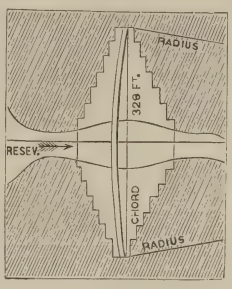


Fig. 1.—Dam across the Furens.

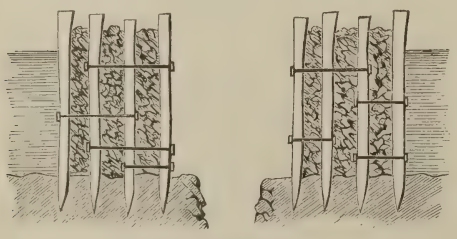


Fig. 2.—Coffer Dam.

DAMASCENE, John (John of Damascus; also surnamed Chrysorrhoas, gold-pouring), a saint and doctor of the church, born in Damascus about 700, died near Jerusalem about 760, according to some in 780. His father Sergius, who, though a Christian, held high office under the caliphs, intrusted his son's education to an Italian monk named Cosmas. He became proficient in philosophy, mathematics, and music, besides acquiring a knowledge of theology. He won the confidence of one of the caliphs, who appointed him governor of Damascus. The circumstances which led to his abandonment of worldly honor are unknown. He liberated his numerous slaves, distributed his wealth among the poor, and retired to the monastery of St. Sabas near Jerusalem, where he spent a long period of probation before being raised to the priesthood. After his ordination, his superiors chose him to combat throughout the East the prevailing heresies. The iconoclasts, emboldened by the protection of the Greek emperors, were desecrating the churches of Palestine; but John, opposing them with voice and pen, prevented the further spread of their sect in Syria. He pursued his career of preacher and apologist throughout Asia Minor, and undertook two journeys to Constantinople, one under Leo the Isaurian, the other under Constantine Copronymus, for the purpose of attacking the heresy in its seat of power; but he gained only fresh persecutions from both princes. On his return to Palestine, he withdrew to his solitude of St. Sabas and devoted his remaining years to the composition of doctrinal, liturgical, and ascetic works. The Greek church celebrates his feast on Nov. 29 and Dec. 4, and the Latin church on May 6.—Two things have made St. John Damascene as popular with scholars and churchmen in the East as St. Thomas Aquinas has been with the schoolmen of the West: his attachment to Aristotle's dialectics, which he was the first to popularize among Christian students, and his labors in introducing a uniform method of ecclesiastical chant. His works have a very wide range, including mental philosophy, ethics, physics, theology, moral treatises, a collection of hymns, and a treatise on sacred music. A religious romance, the earliest in Christian letters, entitled "The Story of the Hermit Barlaam and of Joshaphat, Son of an Indian King," was attributed to him, and published at Spire in 1470. The best edition of his works is that of the Dominican Lequien (2 vols. fol., Paris, 1712), republished at Verona in 1748, and reproduced in vols. xciv.–xcvi. of Migne's *Patrologie grecque* (Paris, 1857, 1866). For his biography, see the *Vitæ Sanctorum* of Surius, at date of May 6, and the *Bibliotheca Græca* of Fabricius, vol. ix.

DAMASCENUS, Nicolaus, a Greek historian and philosopher, contemporary and favorite of the emperor Augustus and Herod the Great. He was born of a wealthy and influential family at Damascus, studied with Herod, resided at his court, and went twice to Rome, the first time in company with that king, 13 B. C., and again to bring about a reconciliation between him and Augustus. At both visits he was very favorably received. Of his writings we have only some fragments, the most important of which are from his work on universal history.

DAMASCIUS, a Greek philosopher, born probably at Damascus, about A. D. 480. He studied for a time at Alexandria, and then went to Athens, where he was first a student and then a teacher of the Neo-Platonic philosophy. When the heathen schools at Athens were closed by order of Justinian in 529, he went to the court of Chosroes, king of Persia; and although he afterward returned, little is known as to the remainder of his life. His works, some of which are extant, included a philosophical treatise entitled "Difficulties and Solutions of First Principles" (*Ἀπορίαι καὶ Λύσεις περὶ τῶν πρώτων ἀρχῶν*, Frankfort, 1828), and commentaries on Aristotle and Plato.

DAMASCUS (Heb. *Dammesek;* Gr. *Δαμασκός*; Arab. *Dimeshk;* called by the present natives *Esh-Shâm*), one of the most ancient cities of the world, formerly the capital of all Syria, and now of the Turkish vilayet of Syria. The population has been estimated as high as 200,000, but probably it does not exceed 150,000, of whom about 130,000 are Mohammedans and Druses, 15,000 Christians, and 5,000 Jews. It is situated in lat. 33° 32′ N., lon. 36° 20′ E., 136 m. N. N. E. of Jerusalem, 180 m. S. by W. of Aleppo, and about 45 m. E. of the Mediterranean, at an altitude of 2,344 ft. above sea level, in a very fertile plain, 80 m. in circumference, so remarkable for its beauty as to be called in oriental phrase one of the four terrestrial paradises. The streams from the adjacent high range of Anti-Libanus, the Barada or Chrysorrhoas and the Awadj, are supposed to be the Abana and Pharpar of Scripture (2 Kings v. 12). For many miles the city is surrounded by fertile fields and gardens, which are watered by rivulets and sparkling streams, giving to the vegetation a charming freshness and sweetness. It is nearly two miles in length and a mile in width. The old city or nucleus of Damascus is on the S. bank of the Barada; it is of an oval form, measuring about one mile E. and W. and a mile and a half N. and S., and is encompassed by an old wall having the castle at the N. W. corner. In this part are the principal buildings, the castle, the mosque Abd el-Malek, 650 ft. in length by 150 ft. in breadth, which is the chief architectural monument in the city, the khan As'ad Pasha, and the principal Christian churches and Jewish synagogues. Here many of the Christians reside, mostly near the E. gate. On the south is the Jewish quarter, while the N. W. and the suburbs on the W. and N. bank of the river are occupied by the Moslems and the civil and military employees. In the suburbs W. of the city are the barracks, the beautiful mosque and hospital of Sultan Selim, and the palace.

These suburbs lead into the Meidan, another suburb running S., which terminates in Bawabet Illah (the gate of God), through which the caravans pass on their way to Mecca. Damascus is regular and cleanly for an oriental city; its streets are long and narrow, and tolerably paved with basalt, and many of its residences, though mean and unattractive without, are magnificent within. Almost every house has a fountain more or less decorated in the middle of the court. The market places are well constructed and adorned with numerous pillars. There are many fine baths with marble pavements. The bazaars are numerous. Each class of merchants and artisans has its own bazaar, some of them being very extensive, as those of the goldsmiths, the druggists, the butchers, traders in cotton stuffs, pipe makers, &c. The great khan is a large building filled with various commodities, and frequented by merchants from distant lands. Many of the khans are of great antiquity, and afford even in their present state a good idea of the manner in which business was conducted in ancient times. Besides the mosque Abd el-Malek, there are several others of much beauty, four Jewish synagogues, and Greek, Maronite, Syrian, and Armenian churches. The most numerous Christian communion is the Non-united Greek church, of which the third highest dignitary, the patriarch of Antioch, has since the 16th century resided in Damascus. It is also the seat of the United Greek (Melchite) patriarch, and of a United Syrian and of a Maronite archbishop. The first Protestant congregation has been organized by Presbyterian missionaries from America.—Damascus is the centre of the commerce of Syria; and its trade is very much increased by its forming the meeting point of all the pilgrims to Mecca from the north of Asia. The number of pilgrims who make Damascus their place of rendezvous, with their attendants, amounts annually to several thousands. The city at such times presents the appearance of a vast fair, and every vacant place is filled with camels, horses, mules, and merchandise. Caravans proceed from Damascus also to Bagdad and Cairo. The principal imports by these various channels are broadcloths, different sorts of metals from the coasts of the Mediterranean, and shawls, muslins, and Indian stuffs, which are brought by way of England. Its own manufactures consist chiefly of silk and cotton fabrics, highly finished saddles and bridles, fine cabinet work, jewelry, gold and silver trimming, and excellent soap, made of olive oil, soda, and quicklime. Large quantities of dried fruits and sweetmeats are exported to Constantinople. In former days Damascus was celebrated for the manufacture of sabres that would bend to the hilt without breaking, while the edge was so keen as to divide the firmest coat of mail. (See Damascus Blades.)—This very ancient city was built, according to some traditions, by Uz, the son of Aram; it is repeatedly mentioned in the history of Abraham. It was the residence of the kings of Syria during three centuries, and has experienced many and great changes in every period of its history. Hadad, who is called by Josephus the first of its kings, was conquered by David, king of Israel, but its subjection was of short duration. In the reign of Ahaz it was taken by Tiglath-pileser, who slew its last king Rezin, and added its provinces to the Assyrian empire. The capture of Damascus figures among the lately discovered Assyrian sculp-



Damascus.

tures. It subsequently came under the rule of Babylonia and Persia. After the battle of Issus (333 B. C.) it fell into the hands of Alexander the Great, and soon afterward became a part of the dominions of the Seleucidæ. Pompey attached it to the Roman empire in 64 B. C. At the time of Paul's visit to the city and conversion there, it was temporarily in possession of Aretas, king of Arabia Petræa and father-in-law of Herod the Great. Many Jews had settled in Damascus after its conquest by Alexander; and Christianity being early preached here, it became the seat of a bishop. Under the emperors, Damascus was one of the principal Roman arsenals in Asia, and it was denominated by Julian "the eye of the whole East." The Saracens took it shortly after the death of Mohammed, and made it the seat of the caliphate and the capital of the Mohammedan world. The Ommiyades reigned at Damascus more than 90 years. On their fall the Abbassides, their successors, made Bagdad their capital. When the family of the Fatimites obtained the supremacy, Damascus fell under the sway of these Egyptian caliphs; but it was wrested from them by the Seljuk Turks, under whom it was in vain besieged by Louis VII. of France and Conrad III. of Germany, in 1148. Just at the beginning of the 15th century it was taken by Tamerlane, after a protracted resistance, which so enraged the conqueror that he put its inhabitants to the sword without mercy. The Mamelukes repaired it when they gained possession of Syria; but the Turks, under Selim I., took it from them in 1516, and it thus became part of the Turkish empire. In 1832 Ibrahim Pasha took it and added it to the pashalic of Egypt; but in 1840 it was restored to Turkey. In 1860 a massacre of the Christians in the Lebanon by the Druses took place, and many of the Christians in the villages round Damascus fled for refuge into the city. Shortly afterward the Mohammedans there, at a given signal, rose in a body and commenced a general massacre of them. Hundreds who fled out of the city were overtaken and killed. The exact number of the victims of this massacre has never been ascertained, but it is estimated that about 3,000 adult male Christians were murdered, and many of the women and girls were reduced to slavery. Abd-el-Kader, the exiled chieftain of Algiers, then living in retirement at Damascus, distinguished himself by protecting several hundred Christians who had taken refuge in his mansion. After the massacre numbers of Christian merchants and artisans removed to Beyrout. The building of a macadamized road between Damascus and Beyrout was commenced in 1859 by a French company, and diligences now run daily between the two cities.

DAMASCUS BLADES. These famous weapons, though in use among nations little skilled in the metallurgic arts long before the Christian era, and made familiar to the European nations from the time of the crusades, have until a recent period defied all attempts to reproduce their remarkable qualities. It appears that the wootz of India was in those ancient times carried from the region of Golconda in Hindostan (where, as well as in Persia, it still continues to be manufactured by the original rude process), and being delivered at Damascus, was there converted into swords, sabres, and scymitars. The articles were particularly distinguished for their keen edge, their great hardness, toughness, and elasticity, and the splendid play of prismatic color upon their surfaces, especially when viewed in an oblique light. Their polished surfaces were also covered with delicate lines appearing as black, white, and silvery veins, parallel to each other or interlaced and arranged in bundles of fibres, crossing each other at various angles, or in knots and bunches. Although probably fabricated by simple methods, the highest skill of modern science was long taxed in vain to imitate this variegated or watered appearance, and the rare qualities associated with it. Methods of great ingenuity and complexity were contrived, by which some very good imitations were made; but it was not till after the investigations of M. Bréant and of the Russian general Anosoff, an account of which was published in the "Russian Mining Annual" about 20 years ago, that the subject was fully comprehended. Karsten remarks that the true Damascus (leaving aside the false, which is merely engraving upon a coating of some substance laid upon the steel) is a certain proof of a want of homogeneousness in the metal. All steel, even after melting, and malleable iron also, shows this texture, if polished, plunged in acid, and examined with a microscope; and the softer the metal the more decided this is. The Damascus appearance may be given to iron by welding together bars of different degrees of hardness, drawing them down, and repeating the process several times. Karsten suggests that by using bars of good steel the best oriental blades may have been fashioned in this way. Such was the "torsion" process of Clouet and Hatchette, the bars being well twisted between each welding. The "mosaic" process, also practised by them, differed from the other by cutting the bar into short lengths and fagoting these pieces, the cut surfaces always being placed so as to face outward. Blades of great excellence were thus produced, but still inferior to the genuine Damascus. Faraday in 1819 detected aluminum in wootz by two analyses, and was inclined to refer the peculiarities of the steel to this alloy; but Karsten failed to find any appreciable quantity of this metal, and other chemists have sought in vain for this or any other ingredient to which its excellence could possibly be attributed. Elsner entertained the opinion, which is generally received at Sheffield, that it is the remelting and working over of the steel that imparts to it such valuable properties. M. Bréant appears to have

been the first to suspect the real nature of the Indian process. By producing the steel with a considerable excess of carbon, and by a suitable method of cooling, he found that two distinct compounds of the metal with carbon were formed, one of which may be steel, and the other of a quality approaching cast iron. Left to cool slowly, these tend to separate from their confused mixture, and to crystallize, each quality by itself; the slower the cooling the more complete is this separation, and the coarser the bands of stripes or lines in the hammered steel. The steel was prepared by M. Bréant by melting soft iron with $\frac{1}{50}$ its weight of lampblack; a much more ready way of making steel than by the cementation process. With this he made excellent blades, and also from filings of gray cast iron mixed with an equal quantity of the same oxidized, the materials being carefully stirred during their fusion. The more oxidized the iron the better the effect, a large proportion of carbon causing the steel to work badly under the hammer. Gen. Anosoff, however, who repeated these experiments, was not satisfied with the results, the steel appearing to him to have neither the true lines of the Damascus nor its excellent qualities. The Indian method of carbonizing the iron, which they obtain direct from the ore, getting only about 15 per cent. of metal from the magnetic oxide they employ, is to place it in crucibles made of clay, intermixed with straw, adding about 10 per cent. of dry wood in small bits, and cover it in the crucible with two or three green leaves; only a little more than a pound of iron is the charge of each crucible. They exercise a choice in the wood and leaves, selecting of the former the *cassia auriculata*, and of the latter the *asclepias gigantea* or the *convolvulus laurifolius*. The crucibles are then closely covered with moistened clay, rammed to exclude the air, and 20 or more of them placed together in a small blast furnace, and, with charcoal for fuel, kept at as high a temperature as possible for about 2½ hours. On removing them from the fire and cooling, they are broken, and the steel obtained in the form of a melted lump. If this is covered with irregular protuberances, the quality is bad; but if the surface is smooth, and covered with striæ radiating from the centre, the operation has succeeded, and the steel is excellent. Four or five of these lumps are commonly rejected. The best are remelted, and then, on account of their brittleness, they are exposed to a red heat for some hours in a small wind furnace, by which a portion of the carbon is removed, and the steel is softened, so that it can be easily drawn out under the hammer. This Indian steel, in the opinion of Mr. Stodart, is far superior for cutlery to the best English cast steel. One of the best samples selected by Gen. Anosoff, and analyzed by M. Ilimoff, gave the following result: iron, 98; carbon, 1·31; sulphur, 0·014; silicium, 0·5; aluminum, 0·055; copper, 0·3; silver, traces. The researches of Gen. Anosoff were made with great minuteness, and their results present many curious and interesting particulars. The information he acquired upon the subject led to the establishment of works at Zlatust in the Ural mountains, where the manufacture of Damascus steel is carried on by a process of his own invention. The quality of the steel he found to be indicated by the appearance of the lines upon the surface, by the color of the ground, and by that of the light reflected from its face. The scoriæ detached from the metal in forging receive from it the impression of its lines, and when examined by the aid of a microscope they serve better to denote its character than the metal itself; but much experience is required to distinguish correctly the effects of the great variety of lines. Straight lines nearly parallel indicate a bad quality of steel. As they shorten and curve, the quality improves. It is still better when the short lines are broken up, and the spaces between them are dotted over with isolated points, particularly if they become like the meshes of a net, and are connected by serpentine lines running in different directions. The most perfect quality of steel is indicated by the threads or lines forming little points or knots, and being arranged in groups of the same pattern over the whole surface of the steel. Figures coarsely and strongly marked are much to be preferred to fine delineations. The scoriæ also indicate the depth of the color of the steel; those of deep color and vitreous are the best. When the cool surface of the melted steel in the crucible is not uniform and displays no colored reflections, the quality is bad. The more brilliant the lustre and the more decided the reflection, the better it is, especially if this has a golden yellow tint. It may also have a bluish or reddish color. The peculiarities of the lines (whether properly coarse, or whether too fine) appear to Gen. Anosoff to depend upon the proportion of carbon and the intimacy of its combination with the iron. The color of the watered lines and that of the ground depend upon the purity of the iron and the carbon; a ground of deep shade and brilliant lustre, with undulations of white, indicates purity of materials. The reflection which the surface of the steel gives is the best indication of the condition in which the carbon exists in it. In the yellow-colored only is the combination of carbon and iron complete. When the reflection is red, the carbon is mixed with some strange substance; and when there is no reflection, the carbon is apparently unaltered from its original condition, and the steel, if largely charged with it, is brittle. Gen. Anosoff produced steel having the qualities of Damascus by four different methods. That which was the most practicable consisted in melting the iron in crucibles with graphite. A charge of 11 lbs. of iron, or a smaller one for a very hard steel, is introduced into the crucible with $\frac{1}{12}$ as much graphite, and $\frac{1}{32}$ part of scales of iron, together with a certain quantity of some flux, as dolomite.

This being a very fusible flux, only about $\frac{1}{24}$ part is employed. Being well covered, the crucible is placed in the fire, and the blast is put on. In 3½ hours the surface is covered with a thin layer of scoriæ, on which floats the excess of graphite; one fourth of it has disappeared. The metal has acquired a weak display of longitudinal lines, a clear ground, and, if the graphite is good, a certain degree of reflection. By continuing the fusion four hours the loss of graphite is one third, and the lines are undulating. In 4½ hours half the graphite is taken up, and the lines attain a medium degree of coarseness. The crucible generally begins to fail at this point, but if it should retain its shape five hours three fourths of the graphite will have disappeared, the lines will be reticulated and of medium coarseness, and the scoriæ amount to nearly half a pound in weight. By continuing, when possible, the fusion for another half hour, the graphite will nearly all disappear, the scoriæ will amount to two thirds or three fourths of a pound, and the lines upon the steel will become more or less decided, reticulated, and sometimes zigzag. The following are given as requisites for the best steel: charcoal of the cleanest sort, as pine; a furnace constructed of the most refractory materials; the best quality of crucibles; iron also the best, very malleable and ductile; pure native graphite, or that obtained by breaking up the best crucibles; flux of dolomite or calcined quartz; a high temperature; fusion as long continued as possible. The blast of the furnace is kept on till the fuel is entirely consumed; and the crucible is not removed until it is cold, or at least black. The cover is then taken off, the graphite removed, the scoriæ are broken, and the lump of steel is extracted. When cold, this presents a surface of uniform appearance; or there may be a depression in the centre if the steel is very hard and shows no reflection; or if steel of this quality exhibits no outward depression, a cavity may be looked for in the interior of the lump, which is the effect of too rapid cooling, and indicates a very inferior quality. The lump, which weighs about 11 lbs., is drawn out under the hammer with three to nine heats; it is then separated into three pieces, each of which is forged anew. Particular care is required in reheating to attain the proper temperature. At a white heat the steel, if hard, will crumble; if tender, it loses the watered lines. The best steel may be drawn out cold without cracking, and may even become red-hot by hammering. In working the bars into other shapes, they ought not to be heated beyond a clear red, and the last heat should not exceed a cherry red. It is well, as the lower part of the lump is always better marked than the upper, to keep the two original sides distinguished from each other, that the cutting edge may be formed out of the lower. The process of bringing out the watered appearance on the surface of Damascus blades is accomplished by the use of a diluted acid, which acts more upon the ground than upon the lines. All acids are not equally suitable for this purpose. Nitric acid acts not only upon the iron, but also upon the carbon, and moreover injures the lustre. Sulphuric acid, having no effect upon the carbon nor the reflection of the surface, is much to be preferred, especially when it is used in the state of a sulphate; and a sulphate of iron which contains a certain quantity of sulphate of alumina is found to produce the best effects. The blade, thoroughly cleaned, is washed with the solution by pouring it over the surface, and when the lines are developed it is repeatedly washed with soap and water, and wiped dry with a cloth, care being taken not to wet any portion after it has been once dried. Some vegetable acids, as lemon juice or vinegar, answer very well in place of the solution of sulphate of iron. The last operation is to rub the surface over with pure olive oil and again wipe it dry. The total expense of the production of blades by these processes is estimated at Zlatust to be about $1 10 a pound. They prove to be of similar properties to those of the famous oriental blades, the accounts of which have not been so much exaggerated as is generally supposed. Gen. Anosoff died in 1851, and Atkinson in his work on Siberia says that his successor at the works failed to produce the remarkable blades for which the establishment had become celebrated. The observations of Gen. Anosoff upon the introduction of other metals to alloy the steel are minute, but they are unfavorable to any mixtures with the iron and carbon.

DAMASK, a fabric originally manufactured at Damascus, whence its name. It was made of silk, and was distinguished by its ornamental woven figures of fruits, flowers, animals, and landscapes. It is still distinguished by these ornaments, and by the mode in which they are introduced in the process of weaving, though the material of modern damask is often linen, sometimes indeed woollen, or even cotton, or a mixture of linen and cotton. The cotton fabric, from its want of durability and beauty, has little to recommend it for this manufacture, particularly as it is only by great care and frequent bleaching that it can be made to retain its whiteness. Its peculiar texture is that called tweeling or twilling, in which the warp and the woof cross each other, not alternately, but at intervals of several threads. These intervals being at every eight threads in damask, the stuff is called an eight-leaf twill. The linen damasks manufactured at Dunfermline in Scotland, and at Lisburn and Ardoyne in Ireland, are used chiefly for table cloths and napkins. Diaper is a variety of damask, differing from it by the warp and the woof crossing each other at intervals of five threads.

DAMASKEENING, the art of ornamenting iron or steel by inlaying with gold, silver, or some other metal. It is chiefly used for adorning sword blades, guards, and locks of pistols. The most beautiful method of damaskeening con-

sists in cutting the metal deep with a graver, and filling the groove with thick wire of gold or silver. In this way the wire adheres very strongly. The more common process is superficial only. For this, the metal is heated to a blue color; it is then hatched with a knife, and the figure desired is drawn with a fine brass bodkin upon the hatching. This done, a gold wire is conducted according to the pattern designed, and sunk carefully into the metal with a copper tool. Of late a method is in practice of eating out a cavity for the precious metal by means of acid. The art was carried to great perfection in Damascus, whence its name. Its invention is attributed by Herodotus to Glaucus of Chios.

DAMAUN, or **Daman,** a seaport of India, on the coast of N. Concan, belonging to the Portuguese, situated at the mouth of the Damaun river, on the gulf of Cambay, 82 m. N. of Bombay; pop. about 6,000. It has a fine appearance from the sea, and has several churches, convents, and Parsee temples, but the streets are narrow and dirty. The river has a bar at its mouth, with 18 feet of water at high tide. Ship building is carried on to some extent. The Portuguese sacked and burned the town in 1531, and in 1558 took formal possession of it. The territory which they hold has an area of 155 sq. m.; pop. in 1866, 40,980.

DAMBOOL, or **Dambolo,** a village in the island of Ceylon, 40 m. N. of Candy, with an immense rock about a mile distant, rising 550 ft. above the plain, and called Damboollagalla. On its S. side, 100 ft. from the summit, are five very remarkable caves, ornamented with images of Buddha and other deities, in which the Ceylonese monarch Walogambahu concealed himself during an invasion of the Malabars, about 100 B. C. In gratitude for the protection afforded, he converted the caves into Buddhist temples. Images of the god were placed there, priests appointed to conduct the worship, and the revenues of certain lands set apart for their support; and the service is still kept up. In one of the caves is a colossal statue of Buddha hewn out of the rock; a long inscription in another is interesting for the information it conveys concerning the government of Ceylon during the 12th century.

DAMER, Anne Seymour, an English sculptor, only child of Field Marshal Conway, born in 1748, died May 28, 1828. She imbibed an early love for literature, and was celebrated for her accomplishments. In 1767 she was married to John Damer, who killed himself in 1776. She then turned her attention to sculpture, took lessons from Ceracchi and Bacon, and went to Italy to prosecute the art. She was also an excellent amateur actress. The productions of her chisel are numerous and admired. Among them are a bust of Nelson in the Guildhall, two colossal heads on Henley bridge, and a statue of George III.

DAMIANI, Pietro, an Italian prelate and saint of the Roman Catholic church, born in Ravenna about 1000, died at Faenza, Feb. 22, 1072. While young he entered the monastery of Font' Avellana, of which he became abbot in 1041, and in 1057, greatly against his own will, was raised by Pope Stephen IX. to the rank of cardinal-bishop of Ostia. He persuaded the simoniacal Benedict X. and the antipope Cadaloüs to lay aside their pretensions; he vigorously supported the reforms of which Hildebrand (Gregory VII.) was the prime mover, and he was in consequence persecuted by the disorderly clergy of Milan, to whom he was sent as legate. In 1062 he withdrew to his solitude at Font' Avellana, but the next year was sent to France by Alexander II. to investigate the charges of simony against the French clergy. In 1069 he went on a mission to Germany to oppose the application of Henry IV. for a divorce, and succeeded in dissuading that sovereign from his intentions. In 1071 he left his monastery again to restore order in Ravenna, the archbishop of which city had been excommunicated. There are many editions of his writings, comprising sermons, lives of saints, treatises on church affairs, and a work on the abuses of the clergy.

DAMIENS, Robert François, a French regicide, born near Arras in 1714, executed in Paris, March 28, 1757. His character was of the worst description. While a child he was called *Robert le Diable* on account of his wickedness. He twice enlisted as a soldier, but deserted; afterward robbed one of his employers, and fled to Belgium in 1756, where he formed the design of assassinating Louis XV. for political reasons, as he himself alleged, though the popular impression was that he was incited by the Jesuits. He stabbed the king at Trianon on Jan. 5, 1757, was seized and tortured, and finally drawn asunder by horses. He died without disclosing his accomplices, if he had any.

DAMIETTA (Arab. *Damiat;* anc. *Tamiathis*), a town of Lower Egypt, on the right bank of the E. branch of the Nile, 6 m. from its mouth, and 100 m. N. N. E. of Cairo; pop. in 1871, 28,913, of whom 50 were foreigners. Its general appearance is that of a straggling collection of poorly built houses, relieved by magnificent mosques, bazaars, and marble baths, with a few brick dwellings of a better sort on terraces near the river. It has a military school for 400 military officers, founded by Mehemet Ali, a cotton-spinning factory, a large rice mill, and a good coasting and interior trade in dried and salted fish from Lake Menzaleh, rice, coffee, beans, dates, flax, linen, &c. It was once famous for the manufacture of leather and striped cloth, and the name of dimity is supposed to be derived from it. Its foreign commerce was formerly large, but is now merged in that of Alexandria. Its harbor is bad, and is inaccessible to large vessels, owing to a bar at the mouth of the Nile.—The ancient town of Damietta stood about 5 m. nearer the sea than the present. Under the Saracens it rose to great importance, and the

crusaders, looking upon it as the bulwark of Egypt on the Mediterranean side, made it the object of many attacks. In one of these sieges it was captured by Louis IX. of France (1249); but the victorious monarch, having fallen soon after into the hands of the Arabs, was forced to purchase his freedom by restoring the city to its former owners. The sultan of Egypt, because of its exposed position, razed it to the ground, built the present city, and blocked up that mouth of the Nile by which it communicates with the sea.

DAMIRON, Jean Philibert, a French eclectic philosopher, born at Belleville, May 10, 1794, died in Paris, Jan. 11, 1862. A pupil of the normal school, he taught literature and philosophy in provincial colleges, and was called to Paris, where he occupied a chair of philosophy in three of the principal colleges, and was finally appointed professor of philosophy in the faculty of letters. In 1836 he was elected to the academy of moral and political sciences, where he succeeded Destutt de Tracy. His works are: *Essai sur l'histoire de la philosophie au XIX^e^ siècle* (1828); *Cours de philosophie* (1831), treating of psychology, logic, and morals; *Essai sur l'histoire de la philosophie au XVII^e^ siècle* (1846), giving a synopsis of the philosophical systems of Descartes, Gassendi, Spinoza, Malebranche, Bossuet, and Fénelon, and concluding with his own opinions; *Mémoires pour servir à l'histoire de la philosophie du XVIII^e^ siècle* (1857); *Souvenirs de vingt ans d'enseignement à la faculté des lettres de Paris* (1859); and *Conseils adressés à des enfants d'ouvriers et à leurs familles* (1861). He also edited Jouffroy's *Nouveaux mélanges*, with an introductory notice, besides publishing a variety of miscellaneous philosophical memoirs, including sketches of Bayle, Leibnitz, Clarke, Helvétius, Diderot, and others.

DAMOCLES, one of the courtiers of Dionysius the Elder, tyrant of Syracuse. As related by Cicero, Damocles had extolled the happiness of Dionysius in being a rich and powerful king, and the latter, wishing to show him the nature of that happiness, placed him one day at a magnificent banquet, with a naked sword suspended above his head by a single hair.

DAMON AND PYTHIAS, two celebrated Syracusans, whose names are always joined as the types of true and noble friendship. They were both Pythagoreans. Pythias, or correctly Phintias, was condemned to death by Dionysius the Elder, but requested to be temporarily released in order to arrange his affairs, promising to procure a friend to take his place and suffer his punishment if he should not return. Pythias was allowed to depart, and Damon gave himself up as his substitute. Before the time for the execution Pythias returned, and Dionysius set both of them free.

DAMOREAU, Laure Cinthie (Montalant), a French vocalist, born in Paris, Feb. 6, 1801, died at Chantilly in 1863. Her parents were employed as *concierges* in the conservatory, and she became one of the pupils of that institution. In 1819 she made her first appearance in Paris under the name of Mademoiselle Cinti; but her reputation was not established until four years afterward. In 1827 she left the Paris opera and went to Belgium, where she married M. Damoreau, an actor connected with the theatre of Brussels. In 1829 she sang in the first act of the *Matrimonio segreto* together with Malibran and Sontag, without being eclipsed by either of those artists. In 1844 she took leave of the French stage, and made a professional tour in the United States. She afterward became professor in the conservatory, and held that position till 1856. She published a *Méthode de chant*, an *Album de romances*, and some fugitive pieces.

DAMPIER, William, an English navigator, born at East Coker, Somersetshire, about 1652; the date of his death is unknown. In early life he went to sea, served in the war against the Dutch, and afterward became overseer of a plantation in Jamaica. He next spent three years with a party of logwood cutters on the bay of Campeachy, and wrote an account of his observations on that coast in "Voyages to the Bay of Campeachy" (London, 1729). In 1679 he crossed the isthmus of Darien with a party of buccaneers, who captured several Spanish vessels and pillaged the towns on the Peruvian coast. In 1684 he set out from Virginia with the expedition of Capt. John Cook, which cruised along the coasts of Chili, Peru, and Mexico, making depredations on the Spaniards. He then embarked for the East Indies, touched at Australia, and after cruising for some time in the Indian archipelago landed at Bencoolen. He arrived in England in 1691, and published his "Voyage around the World." In 1699, having been appointed to the command of a sloop of war, he was sent on a voyage of discovery to the South sea. He explored the W. and N. W. coasts of Australia, the coasts of Papua, New Britain, and New Ireland, and gave his name to a small archipelago, and to the strait between Papua and New Britain. After numerous other discoveries, he returned by a new route to Ceram in the Moluccas. On his way to England his ship was wrecked off the island of Ascension. He reached England in 1701, and continued to go to sea till 1711, but the latter part of his life is obscure. He published a "Treatise on Winds and Tides," and a "Vindication of his Voyage to the South Sea in the Ship St. George" (1707). The best edition of his collected voyages appeared in London in 1729, in 4 vols. 8vo.

DAMPIERRE, Auguste Henri Marie Picot, marquis de, a French soldier, born in Paris, Aug. 19, 1756, died in battle near the forest of Vicogne, May 8, 1793. He early entered the army, but Louis XVI. ridiculing his partiality for Frederick the Great and Prussian tactics, he resigned his commission. He became president of the department of Aube, and in 1791 aide-

de-camp of Rochambeau, and subsequently served under Biron as colonel of dragoons. He was raised to the rank of general, and at Valmy, Sept. 20, 1792, commanded a division under Dumouriez. At Jemappes, Nov. 6, 1792, he had the principal part in the brilliant victory over the Austrians, but was subsequently defeated at Maestricht, and shared in the defeat at Neerwinden, March 18, 1793. After the defection of Dumouriez Dampierre succeeded as commander-in-chief, and undertook the offensive against superior numbers of the enemy. He was repulsed on May 6, but renewed the action the following day in the forest of Vicogne, and received a fatal wound. The attack was repelled, but the French retired in good order. The convention, which had been on the point of sending him to the guillotine, decreed public honors to his memory.

DAN. **I.** The name of the fifth son of Jacob, and of the tribe descended from him. Dan was the first son of Bilha, Rachel's maid, and own brother to Naphtali, and in a sense connected with Joseph and Benjamin. There is no record of his life; and only one son is attributed to him, though his name Hushim is of plural form, and perhaps indicates not an individual but a family. When the people were numbered near Sinai, Dan was the largest tribe except Judah, containing 62,700 men able to serve; and on entering Canaan they had increased 1,700. It was the last tribe to receive its portion of land, which, though fertile, was the smallest of the twelve, lying in the S. W. part of the country, near the Mediterranean. This ground was disputed by the remnant of the Canaanites, and the Danites became necessarily a rude warlike people, and their principal settlement was called Mahaneh-Dan (the encampment of Dan). The tribe is mentioned as late as the time of David, but after that seems to have lost its identity, its people mingling with the other tribes. **II.** A city in the northern part of Palestine, familiar in the expression "from Dan even to Beersheba." The city was originally called Laish, and was inhabited by people connected with Sidon. A wandering tribe of Danites, tired of their harassed life at home, captured it, and named it after their ancestor, setting up a graven image which they had stolen on their way, and establishing a line of priests who were of the tribe of Levi, but not descended from Aaron. After this settlement it became the recognized northern outpost of Israel. Jeroboam subsequently established an idolatrous worship in Dan. The city was finally laid waste, with other northern cities, by Benhadad.

DAN, a river of Virginia and North Carolina, which rises at the foot of the Blue Ridge in Patrick co., Va., and flows S. E. into Stokes co., N. C. It then turns to the east, and after a winding course of 200 m., during which it five times crosses the boundary between the two states, and drains a tract of 4,000 sq. m., it unites with the Staunton or Roanoke river at Clarksville, Va. It is navigable by boats as far as Danville, Va.

DANA, Francis, an American jurist, son of Richard Dana, born in Charlestown, Mass., June 13, 1743, died in Cambridge, April 25, 1811. He graduated at Harvard college in 1762, and was admitted to the bar in 1767. He joined the "Sons of Liberty," and John Adams's diary of January, 1766, speaks of the club in which "Lowell, Dana, Quincy, and other young fellows" were not ill employed in lengthened discussions of the right of taxation. In 1773 he acted in behalf of the Rhode Island patriots in concert with John Adams for the prosecution in the matter of Rome's and Moffatt's letters; and in the next year he opposed, though one of the youngest of the bar, the addresses of that body to Gov. Hutchinson on his departure. In September, 1774, he was chosen delegate from Cambridge to the first provincial congress of Massachusetts. In April, 1775, he sailed for England with confidential letters to Dr. Franklin on the critical state of affairs, from Warren, the elder Quincy, Dr. Cooper, and other leaders. In May, 1776, he was chosen by the Massachusetts assembly one of the council, who at that time acted not only as a senate but as the executive of the state; of this body he continued a member till 1780. In the same year he was chosen a delegate from Massachusetts to the congress of 1777, which formed the confederation, and again to the congress of 1778, where he was placed at the head of a committee charged with the entire reorganization of the army and its establishments. Accompanied by President Reed, Gouverneur Morris, and others of the committee, he passed from January to April of that year in the camp at Valley Forge, concerting with Washington the plan subsequently transmitted by congress, June 4, 1778, to the commander-in-chief, "to be proceeded in with the advice and assistance of Mr. Reed and Mr. Dana, or either of them." On Sept. 29, 1779, he was chosen secretary to Mr. Adams's embassy, to negotiate treaties of peace and commerce with Great Britain, sailed with the minister from Boston Nov. 13, and arrived at Paris Feb. 9, 1780. On March 15, 1781, he received in Paris the congressional appointment of minister to Russia, and in July proceeded to St. Petersburg. His powers extended, besides the making of treaties of amity and commerce, to an accession of the United States to the "armed neutrality" of the north. The results of his two years' residence at the court of St. Petersburg are given in detail in Sparks's "Diplomatic Correspondence of the Revolution," vol. viii. He returned to Boston in December, 1783, and in February, 1784, was again delegated by the assembly to the general congress, where he took his seat May 24, and on the 29th was selected to represent Massachusetts on the committee of states, which continued in session until Aug. 11. On Jan. 18, 1785, he was appointed by Gov. Han-

cock a justice of the supreme court of Massachusetts. In 1786 he was chosen delegate to the Annapolis convention, which resulted in the call of the convention which framed the constitution of the United States; and to this latter body he was also appointed a delegate, but his judicial duties and his health, still suffering from his residence at St. Petersburg, prevented his attendance. In the Massachusetts convention for the adoption of the constitution (1788), he took a leading part in its favor. On Nov. 29, 1791, he was appointed chief justice of Massachusetts, and during his 15 years' tenure of that office kept aloof from political life, except that he was a presidential elector in 1792 and in 1800, as well as in 1808. He was appointed by Mr. Adams, June 5, 1797, with Cotesworth Pinckney and John Marshall, special envoy to the French republic; but precarious health compelled him to decline that office. After retiring from the bench in 1806, Chief Justice Dana took no official part in public affairs. As a judge he was well read and apprehensive of principles, and of an exemplary austerity toward all manner of chicane and indirection; a discerning and assiduous diplomatist, and an influential man in elective and popular assemblies, where his eloquence exhibited a rare union of impassioned feeling with natural dignity. He was one of the founders of the American academy of arts and sciences, and his retirement was enlivened by his interest in enterprises for the benefit of the neighborhood of Boston, and by literary and other cultivated tastes. His house at Cambridge was much visited by his old fellow leaders of the federal party, and by younger men from the university, the Channings, Allston, Buckminster, and others, afterward variously distinguished. He married in early life a daughter of William Ellery of Rhode Island, one of the signers of the Declaration of Independence, and was the father of Richard H. Dana and several other children.

DANA, James Dwight, LL. D., an American geologist and mineralogist, born at Utica, N. Y., Feb. 12, 1813. He graduated at Yale college in 1833, where he evinced an especial love for the natural sciences and mathematics. He soon after received the appointment of teacher of mathematics to midshipmen in the United States navy, and sailed to the Mediterranean, returning in 1835. During the two years following he acted at Yale college as assistant to Prof. Silliman, whose successor he ultimately became. In 1837 he published "A System of Mineralogy," a work of high repute in Europe and America (5th ed., revised and enlarged, 1870). In December, 1836, he was appointed mineralogist and geologist of the United States exploring expedition, then about to be sent to the Southern and Pacific oceans. The squadron, under command of Lieut. Wilkes, sailed in August, 1838, and returned in 1842. During the 13 years following, Mr. Dana was engaged in preparing for publication the various reports of this expedition committed to his charge, and in other scientific pursuits. The results of his labors were given in his "Report on Zoöphytes" (4to, with an atlas of 61 folio plates, 1846), in which he proposes a new classification, and describes 230 new species; the "Report on the Geology of the Pacific" (with an atlas of 21 plates, 1849); and the "Report on Crustacea" (4to, 1,620 pages, with an atlas of 96 folio plates, 1852–'4). In this last named work 680 species are described, of which 658 were new. These reports were published by the government. With few exceptions, the drawings in the atlases were made by Mr. Dana himself. A series of four articles by him entitled "Science and the Bible," called forth by a work of Prof. Tayler Lewis on the "Six Days of Creation," appeared in the "Bibliotheca Sacra" in 1856–'7. Soon after Prof. Silliman's resignation of the chair of chemistry and geology in Yale college, Mr. Dana entered in 1855 on the duties of the office of Silliman professor of natural history and geology, to which place he had been elected in 1850, and which he still retains. In 1854 he was elected president of the American association for the advancement of science, having been for many years one of the standing committee of that body, and in August, 1855, he delivered the annual address before that association at its meeting in Providence. He has also published a "Manual of Geology" (1863), a "Text Book of Geology for Schools and Academies" (1864), and "Corals and Coral Islands" (1872). For many years he has been associated with his brother-in-law Prof. Benjamin Silliman, jr., as editor and publisher of the "American Journal of Science and Arts," founded in 1818 by the elder Silliman. To this journal, as well as to the proceedings of the American academy of arts and sciences in Boston, the lyceum of natural history of New York, and the academy of natural sciences of Philadelphia, Prof. Dana has contributed various important scientific memoirs. He has been elected a member of many learned societies in Europe, including the royal academies of sciences in Berlin and Munich, the geological and Linnæan societies in London, the philomathic society in Paris, and others. In 1872 the Wollaston gold medal, in charge of the geological society of London, was conferred upon him.

DANA, Richard, an American jurist, born in Cambridge, Mass., July 7, 1699, died May 17, 1772. He was grandson of Richard Dana, progenitor of the family in America, who settled at Cambridge in 1640. He graduated at Harvard college in 1718, and after practising law for a time at Marblehead and Charlestown, he removed to Boston, where he became a leading barrister. He was very prominent in the measures of resistance to the arbitrary acts of the British government, which immediately preceded the revolution. Although devoted to his profession and declining office, he took a leading part in those important political as-

semblages, where he sometimes presided, the Boston town meetings from 1763 to 1772; and he was often at the head of the committee chosen by Boston to address the country at large on public affairs, under the form of published instructions to the representatives of the town. He reported the papers of Nov. 20, 1767, and May 8, 1770, noted at that time. He was a member of the sons of liberty, and at their celebrated meeting of Dec. 17, 1769, administered to Secretary Oliver the oath of non-execution of the stamp act, and made and signed a solemn official record of that fact. His death is spoken of in the letters of the leading patriots as a great loss to the cause. He married the sister of Judge Trowbridge, and was the father of Chief Justice Dana.

DANA, Richard Henry, an American poet and essayist, son of Chief Justice Dana, born at Cambridge, Mass., Nov. 15, 1787, died Feb. 2, 1879. He was educated at Harvard college, but did not complete the course, being involved in the noted college rebellion of 1807, and refusing with many others to accept the terms of accommodation offered by the faculty. His degree, however, was conferred upon him, as of 1808, many years later. He spent two years at Newport, R. I., in completing the usual collegiate course, studied law in Boston, and afterward in the office of Robert Goodloe Harper in Baltimore, was admitted to the Massachusetts bar in 1811, and took up his residence in his native town, where he entered upon his profession, and was for a time also warmly engaged in politics, on the federal side, as a member of the legislature and otherwise. His paramount tastes, however, were literary, and in 1814 he joined the club of gentlemen in Cambridge and Boston by whom the "North American Review" was projected and for a time conducted. His earliest writings were published in that periodical, the "Essay on Old Times," and an article on the poems of Washington Allston, afterward his brother-in-law. In 1818–'19 he was associated with Prof. E. T. Channing in the editorship of that review, in which his criticisms excited much attention. In 1821–'2 he published in numbers "The Idle Man," with some aid from his friends Bryant and Allston. It was read and admired by a class of literary men, but this was too small a public for its continuance. His first poems, "The Dying Raven" and "The Husband and Wife's Grave," appeared in the "New York Review" in 1825, then edited by Bryant. In 1827 he published "The Buccaneer and other Poems," in a small volume which was well received, and highly commended by the critics. In 1833 he published an enlarged volume, including new poems and the papers of "The Idle Man;" and again in 1850, "Poems and Prose Writings" (2 vols.), in which to the contents of the former volume are added poems, the essays and reviews from the "North American Review," and others of more recent date; being a complete collection of his writings, with the exception of a series of eight lectures on Shakespeare delivered in Boston, New York, and Philadelphia, in 1839–'40. In the controversy between the Unitarian and Trinitarian Congregationalists of Massachusetts, in 1825–'35, Mr. Dana took an active part with the latter; but he afterward became connected with the Episcopal church. The success of Mr. Dana as an author is perhaps more noteworthy for its quality than for its extent. His peculiar style is most highly appreciated by lovers of the simple and masculine beauties of the older English writers. In dealing with the greater passions, the handling is bold, and the language instinctively true; but the manner is dramatic, not melodramatic, nor what is called popular.

DANA, Richard Henry, jr., an American author and lawyer, son of the preceding, born in Cambridge, Mass., Aug. 1, 1815. He graduated at Harvard college in 1837. Having been compelled by an affection of the eyes to suspend his collegiate course in 1834, he made the voyage described in his "Two Years Before the Mast" to California, then an almost unknown region. He was a member of the law school from 1837 to 1840, and during two years of that time was also adjunct to Prof. Channing in the department of rhetoric in the university. He was admitted to the Boston bar in 1840, and was at once much employed in admiralty cases. In 1841 he published a manual of sea usages and laws, under the title of "The Seaman's Friend," republished in England as "The Seaman's Manual." His practice now became general in the law courts. He was engaged in 1845 in the well known investigation of the presumption of murder or homicide in York's case (9 Met., 93), which led to a revision of the decisions and to new enactments on the general subject in several states. He also defended the legal right to require the use of the Bible in the common schools in Maine (Donahue *v.* Richard, 38 Maine Rep., 376); discussed the canon law of the Episcopal church in the Rev. Mr. Prescott's case in 1852; the title to public and religious charities in the case of the Presbyterian synod *v.* the parish of the late Dr. Channing in 1854, and in the case of the Price charity in 1864; and appeared for the defence in the numerous trials for the rescue of the slave Shadrack in 1853, and in the more celebrated case of Anthony Burns in 1854. He was a member of the Massachusetts constitutional convention of 1853. Having been one of the founders of the free soil party, a delegate from Boston to the Buffalo convention of 1848, and a popular speaker in the republican movement of 1856, he has remained attached to the republican party, advocating the election of Lincoln in 1860 and in 1864, when he delivered political addresses in several states, and that of Grant in 1868 and 1872. In 1859 and 1860 he made a tour around the world, revisiting California and visiting the Hawaiian Islands, China, Ja-

pan, Ceylon, India, and Egypt, and returning through Europe. In 1861 he was appointed United States attorney for Massachusetts, and held that office till 1866, arguing every prize case that came up in the district. He also, in conjunction with Mr. Evarts, argued the prize cases for the government before the supreme court, laying down the principles that in a civil war a government can exercise belligerent powers against its own citizens, on its own soil or on the high seas, just as against neutral nations; that any portion of her soil in actual firm possession and control of a rebellion is enemy territory in the technical sense of the laws of war, and the property of persons residing in such territory is enemy property in the technical sense of the prize law, irrespective of their personal loyalty or disloyalty, the property being in such case condemned as prize, and not forfeited for violation of law; that enemy territory depends on the fact of hostile occupation for the time being, and has no reference to any so-called ordinance of secession or declaration of independence; and that, although the president cannot initiate a war, he can, in the absence of congress, use war powers for the national defence. These principles were established in the decision of the court. (The Prize Cases, 2 Black's Rep., 635.) Mr. Dana also drew up the prize act of 1864, which repealed all prior acts on the subject, and completed a prize code for the United States. He was counsel for the United States in the proceedings against Jefferson Davis for treason in 1867–'8 (Johnson's "Reports of Decisions of Chief Justice Chase, in Circuit," vol. i.). In 1866, by request of the family of Mr. Wheaton, he published an edition of Wheaton's "Elements of International Law," covering the period between Mr. Wheaton's death in 1848 and the time of publication. His note, No. 215, on the legislative, judicial, and diplomatic history of the neutrality laws of the United States and Great Britain, was printed by the government and translated into French for the use of the arbitrators at Geneva in 1872. Others of his notes were frequently cited by the counsel on each side, and by the arbitrators in their opinions. In 1867 and in 1868 he represented Cambridge in the Massachusetts legislature, and was chairman of the committee on the judiciary. His speech in the legislature in 1867, in favor of the repeal of the usury laws, was printed at the request of the members, and reprinted in 1873 in New York by a body of gentlemen interested in the repeal of usury laws generally. In 1866 he received the degree of LL. D. from Harvard college; and he was lecturer on international law in the law school of the university in 1866 and 1867. In 1868 he was a candidate for representative in congress in opposition to B. F. Butler in the Essex district, and was defeated by a large majority. He has been a member of the diocesan convention of the Episcopal church for more than 20 years. The literary production by which Mr. Dana is best known is "Two Years Before the Mast" (New York, 1837). It presents the ship and shore life of a common sailor, detailed from personal experience by a man of education. It gained at once an extraordinary popularity both in England and America, and still retains it. It was republished in an enlarged form in 1869, with an additional chapter giving an account of his second visit to the scenes described, and some subsequent history of persons and vessels that figured in the original work. He has also published "To Cuba and Back" (1859), a narrative of a short vacation trip. His biographical sketches of his kinsmen, Prof. Edward Channing and Washington Allston, are prefixed to the posthumous volumes of their writings. His oration on the late Edward Everett (Cambridge, 1865) is also worthy of particular mention. He has occasionally contributed to the "North American Review," "The Law Reporter," and "The American Law Review."

DANA, Samuel Luther, M. D., LL. D., an American chemist, born at Amherst, N. H., July 11, 1795, died in Lowell, Mass., March 11, 1868. He graduated at Harvard college in 1813, during the war with Great Britain, and received a commission as lieutenant in the 1st United States artillery, with which he served in New York and Virginia until the close of the war. The army having been disbanded, he resigned his commission in June, 1815, and commenced the study of medicine, receiving his degree of M. D. in 1818. From 1819 to 1826 he practised his profession at Waltham, Mass., established a chemical laboratory for the manufacture of oil of vitriol and bleaching salts, and founded the Newton chemical company, of which he was the chemist till 1834. He then became resident and consulting chemist to the Merrimack manufacturing company, the duties of which office he performed till his death. He was associated with his brother, Prof. James F. Dana, in publishing the "Mineralogy and Geology of Boston and its Vicinity" (1818). His next publication, made while he was in England in 1833, was a clear exposition of the chemical changes occurring in the manufacture of sulphuric acid. This was followed by a report to the city council of Lowell on the danger arising from the use of lead water pipes. About this period his agricultural experiments and observations were made, and the materials obtained for "The Farmers' Muck Manual," published in 1842. "An Essay on Manures" was honored by the prize of the Massachusetts agricultural society in 1843. His translation and systematic arrangement of the treatise of Tanquerel on lead diseases was an important contribution to medical knowledge. The discussion of the lead pipe question gave rise to several papers and pamphlets from his pen. His investigations shed light on the more obscure points of the art of printing cotton, and led to many improvements. His discoveries in connection with bleaching cotton were first published in the *Bulletin de la société indus-*

trielle de Mulhouse. The principles there established have led to the American method of bleaching, of which Persoz, in his *Traité de l'impression des tissues*, says that "it realizes the perfection of chemical operations."

DANAË, in Greek mythology, the daughter of Acrisius, king of Argos, and mother of Perseus. An oracle had predicted that a son of Danaë would one day kill Acrisius, and the latter, to prevent the fulfilment of the prophecy, shut up Danaë in a brazen tower. But Jupiter visited her by transforming himself into a shower of gold and descending through the roof, and Danaë gave birth to a son. Acrisius placed the mother and child in a chest, and cast them into the sea; but Jupiter watched over their safety, and wafted them to the island of Seriphus, where they were kindly received by King Polydectes. Perseus grew up, and did afterward kill his grandfather by an accident. Another legend relates that Danaë went to Italy, where she became the mother of Daunus, the ancestor of Turnus, who was king of the Rutuli when Æneas arrived in Italy.

DANAÏDES, according to the Grecian legend, 50 daughters of Danaüs, married to the 50 sons of their uncle Ægyptus. (See DANAÜS.) Their father made them promise to murder their husbands on their wedding night. This promise they all fulfilled except Hypermnestra, who spared her husband Lynceus. Her father imprisoned her for this act, but she afterward gained his forgiveness, and was restored to her husband, who after the death of Danaüs succeeded to the throne of Argos. According to some writers, he murdered Danaüs with his own hands. The other Danaïdes buried the bodies of those they had slain, and after this expiatory act were purified from their crime by Mercury and Minerva. Danaüs, to procure other husbands for them, instituted public games, in which his daughters' hands were the prizes of the victors. Though the idea is apparently inconsistent with that of their purification, the Danaïdes were represented as condemned in Hades to pour water into sieves, in the vain endeavor to fill them, mocked, like Sisyphus, with the delusive hope of ultimate success. This is the generally received version of the story of the Danaïdes; but some poets represent Lynceus as avenging the death of his brothers by the murder of all the sisters save his wife. Other portions of the myth are differently given.

DANAÜS, in Grecian mythology, the son of Belus and grandson of Poseidon (Neptune) and Libya. He was the father of 50 daughters (the Danaïdes), and the mythical progenitor of the Danai or Argives. At the division of the possessions of Belus, Danaüs received the kingdom of Libya, while his twin brother Ægyptus became the ruler of Arabia. Believing that the 50 sons of his brother were plotting against him, Danaüs fled with his daughters to Argos, sailing thither in a ship which he had built, and landing on the way at Rhodes, where he erected a statue to Athena Lindia. Arrived in Argos, he was made king of the country by the people, in consequence of an omen which seemed to the Argives to point to this choice. The sons of Ægyptus, however, followed him to his new kingdom, but professed friendly intentions, and asked and received his daughters in marriage. (See DANAÏDES.) According to some writers, Danaüs died a natural death; but according to others, he was slain by Lynceus, the only survivor of his brother's sons.

DANBURY, a borough in the town of the same name, one of the county seats of Fairfield co., Connecticut, 28 m. W. by N. of New Haven, and 53 m. N. N. E. of New York; pop. of the town in 1870, 8,753; of the village, 6,542. It is the terminus of the Danbury and Norwalk railroad, and of a branch of the Housatonic line. Still river, an affluent of the Housatonic, flows through the town and furnishes good water power. The village is built principally on a single street, 1½ m. long, and presents a handsome appearance. Lake Kenosha, about 2 m. distant, is a favorite resort for boating and fishing. From Deer hill in the vicinity a fine view of the village is obtained. It has long been noted for its manufacture of hats, the first factory having been established in 1780. There are now ten companies engaged in the business, having an aggregate capital of $500,000, of which four make 216,000 hats a year. The Danbury shirt company produces 230,000 shirts annually. The manufacture of sewing machines is also carried on. There are two national banks with $577,000 capital, a public library, a high school, and nine churches.—Danbury was settled in 1684. In 1771 Robert Sandeman, from whom the sect of Sandemanians derives its name, died here. The town was attacked and burned by the British in 1777, when Gen. Wooster, the American commander, was mortally wounded. In 1854 a monument was erected to his memory, and another has recently been raised in honor of the citizens of Danbury who fell in the civil war.

DANBY, Francis, a British painter, born in Wexford, Ireland, Nov. 16, 1793, died probably at Exmouth, England, Feb. 17, 1861. Among the best known of his early pictures are "Christ Walking on the Sea," "The Embarkation of Cleopatra on the Cydnus to meet Mark Antony," "The Opening of the Seventh Seal," &c. His later works are more familiar to the general public through the medium of the illustrated art journals. Such are the "Ship on Fire," "Departure of Ulysses from Ithaca," and "Caius Marius among the Ruins of Carthage." Two of his sons have also acquired some distinction as painters.

DANCE, George, an English architect and artist, son of a distinguished architect of the same name, born in 1741, died in London, Jan. 14, 1825. He had already secured a reputation when he was commissioned in 1770 to build Newgate prison, which was his principal

work. He afterward built the Giltspur street Compter and St. Luke's hospital, and in 1789 the Guildhall. Among his minor works are the Shakespeare gallery, Pall Mall, now the British institution, and the Bath theatre. The W. side of Finsbury square is also by him. He was one of the earliest members of the royal academy of London, and was until 1815 professor of architecture to the society, although he never delivered any lectures nor exhibited any of his drawings at its exhibitions. From 1811 to 1814 he published a series of portraits, chiefly profiles, of the public men and artists of the day, engraved by William Daniell. He succeeded his father as city surveyor upon his death, Feb. 8, 1768, and held the office till 1816, when he resigned in favor of his pupil W. Montague. He was buried in St. Paul's, near Wren and Rennie.

DANCE OF DEATH (Lat. *chorea Machabæorum ;* Fr. *danse macabre*, and *danse des morts ;* Ger. *Todtentanz*), a mediæval religious dance, long a favorite subject of painting and poetry, in which persons of all ranks and ages were represented as dancing together with the skeleton form of death, which led them to the grave. In the 14th century masked figures representing death appeared during carnival, with the privilege of taking by the hand and dancing with whomsoever they might meet. With the approbation of the clergy, a sort of masquerade was performed in the churches, in which the chief characters in society were supported, dramatic conversations being introduced between Death and the persons in the procession, each of whom in turn vanished from the scene, as a symbol of departure from life. This custom, as represented by art, appears for more than three centuries in a vast number of forms, most various in pathos, humor, and grotesqueness; in verse in nearly every European language; and in paintings on town halls, in market places, in the arcades of burying grounds, and on the walls of palaces, cloisters, and churches. One of the most interesting poems on the subject is in Spanish, the *Dança general de los muertos* (found entire in the appendix to Ticknor's "History of Spanish Literature"), which belongs to the 14th century, and in which Death summons to his mortal dance first the pope, then the cardinals, kings, bishops, and so on, down to day laborers. Each makes some remonstrance, but in vain, "for still the cry is, Haste! and haste to all." Poetical inscriptions often accompanied the paintings, which are first traced in the southwestern parts of Germany, in Switzerland, Alsace, and Swabia; the oldest was one which formerly existed in a convent at Klingenthal, near Basel, but which has long been wholly destroyed, and of which nothing is known but the fact of its existence. An inscription on the wall says it was painted in 1274. Among the most celebrated dances of death are those of the cloister of the Dominicans at Basel, painted in 1480, to commemorate a visitation of the plague, and several times renewed, especially in 1568; those of the chapel of St. Mary's church at Lübeck, in the castle and cemetery of Dresden, at Annaberg, Lucerne, Strasburg, and Rouen, in the church of the Innocents at Paris, in the church of *La chaise Dieu* in Auvergne, in the crypts of the church of St. Michel at Bordeaux, and in the cathedral of Amiens; in the church of St. Paul in London, to which John Lydgate added verses that were translated from the French; in the palace of St. Ildefonso in Spain; and the famous painting of the *Trionfo della morte* in the *campo santo* of Pisa, by Andrea Orcagna, in the 14th century. In all 39 of these dances are mentioned, the latest being that at Staubingen, painted in 1763. Many have been preserved in engravings, are found on missals and on the margins of numerous old books, and in the 16th century were reproduced in miniature as ornaments for the sheaths of swords and poniards. The fresco at Basel was destroyed by the falling of the walls in 1805, only fragments of it being preserved in the city library; but in the 16th century it suggested to Holbein his celebrated series entitled "The Dance of Death," which combines 53 distinct and most diverse scenes. Death here assumes various ironical costumes, while meeting with and overcoming persons in every condition of life. The older pictures are not divided into single scenes, but the skeleton appears leading after it a procession of all ranks and ages. All of the poems and paintings on this grim subject mingle sublimity and grotesqueness. The best works treating of it are those of Massmann, *Literatur der Todtentänze* (Leipsic, 1841), and *Baseler Todtentänze* (Stuttgart, 1847); Peignot, *Recherches sur la danse des morts* (Dijon and Paris, 1826); Langlois, *Essai historique, philosophique et pittoresque sur les danses des morts*, with 54 engravings (2 vols., Rouen, 1852); and Douce, "The Dance of Death" (London, 1833).

DANCING DISEASE, or **Tarantismus,** an epidemic nervous affection, apparently allied to chorea, at one time prevalent in Italy and other countries in the south of Europe. It was long supposed to be caused by the bite of a large spider, the *aranea tarantula ;* but as scarcely any of those affected with it had any consciousness of having been bitten by a spider or any other insect, and as in every instance it has been propagated mainly by physical contagion, like chorea, demonomania, and other kindred affections, it undoubtedly originated from the same causes. Tarantismus was first noticed in the 15th century, a period rife with cerebral and nervous affections, and is thus described by Baglivi: "When any are stung (or attacked with the disease), shortly after it they fall upon the ground, half dead, their strength and sense going quite from them. Sometimes they breathe with a great deal of difficulty, and sometimes they sigh piteously; but frequently they lie without any manner of

motion, as if they were quite dead. Upon the first sounding of music the forementioned symptoms begin slowly to abate; the patient begins slowly to move his fingers, hands, feet, and successively all parts of the body, and as the music increases their motion is accelerated; and if he was lying upon the ground, up he gets (as in a fury), falls a dancing, sighing, and into a thousand mimic gestures. These first and violent motions continue for several hours, commonly for two or three. After little breathing in bed, where he is laid to carry off the sweat, and that he may pick up a little strength, to work he goes again with as much eagerness as he did before, and every day spends almost 12 hours by the clock in repeated dancing; and, which is truly wonderful, so far is he from being wearied or spent by this vehement exercise, that, as they say, it makes him more sprightly and strong. There are, however, some stops made; not from any weariness, but because they observe the musical instruments to be out of tune; upon the discovery of which one could not believe what vehement sighings and anguish at heart they are seized with, and in this case they continue till the instrument is got into tune again, and the dance renewed. This way of dancing commonly holds four days; it seldom reaches to the sixth." Other observers speak of those affected with tarantismus as howling like dogs, leaping, running wildly about, stripping themselves of their clothing, expressing a like or dislike for particular colors, "and never better pleased than when soundly drubbed on the breech, heels, feet, or back." The attack was frequently followed by melancholy, the lypemania of the medical writers, under the influence of which those affected sought solitary and deserted places, graveyards, and the like, and there remained for several days. Music, generally on the guitar, violin, or dulcimer, was the established prescription for the disease. The dancing mania was very likely to recur at the anniversary of the attack.

DANCOURT, Florent Carton, a French comedian and dramatist, born at Fontainebleau, Nov. 1, 1661, died in Berry, Dec. 6, 1725. He studied law, and was admitted to the bar at the age of 17. But his legal career was soon broken up by a clandestine marriage with the daughter of a comedian, and he became an actor, making his début at the Comédie Française in 1685; and in June of the same year he brought out his first comedy, *Le notaire obligeant*. This was well received, and another play the following year was even more successful, while his *Chevalier à la mode* (October, 1687) established his reputation as a writer of comedy. For 33 years he made the theatre successful, and held an unbounded popularity with the public. He finally left the stage in 1718, at the age of 57, and afterward wrote some versifications of the psalms and a sacred tragedy which is not extant. There are several editions of his plays (best, 12 vols., 1760; select works, 5 vols., 1810.) The greater number of them are farces, mostly of low life. He is said to have had many assistants in their composition.

DANDELION (Fr. *dent de lion; leontodon taraxacum*, Linn.), a well known plant of the order *compositæ*, with a perennial root, tubular leafless flower stalks, and bitter milky juice. The spreading toothed leaves spring from the rootstock near the ground, and when blanched are used as a salad; the root also is sometimes roasted, and used as a substitute for coffee, or to adulterate it. Under cultivation the plants are forced to extraordinary size, to vend in the spring for a popular and much esteemed pot herb under the name of greens. The fruit



Dandelion (Leontodon taraxacum).

is tapering and surrounded by feathery hairs. In medicine, the expressed juice, especially of the root, has been employed for its aperient, detergent, and diuretic properties, and should be used while fresh. The flowers are very conspicuous in the meadows in early spring. The common and generic names, both meaning lion's tooth, were given from a fancied resemblance of its single florets.

DANDOLO. I. Enrico, doge of Venice, member of a patrician Venetian family which traced its origin to the Roman era, born about 1110, died June 1, 1205. He served the republic in many capacities, and about 1171 was sent to Constantinople to reclaim the Venetian vessels and subjects unlawfully captured and held by the Byzantines. The emperor Manuel Comnenus denied the request, and according to some chroniclers nearly blinded him by burning his eyes with hot irons, while more trustworthy accounts attribute his impaired sight to a wound. He was appointed doge in 1192, when he was above 80 years of age, but he still retained all the fire and vigor of youth. During the fourth crusade, the French barons, under Baldwin of Flanders, applied to Venice for aid. At the instance of the doge the neces-

sary ships were supplied on the promise of a large subsidy, and an alliance was formed with the crusaders. Zara, a city on the Adriatic which had refused to join the league, having been taken and sacked to provide for a deficiency in the subsidy, the expedition set sail for Constantinople, on the pretext of enabling young Alexis Angelus to restore his father, who had been deposed by his own brother. The city was defended by immense fortifications, by deep fosses and strong walls, by massive chains stretched across the harbor, and by 478 towers placed in a circumference of 18 miles. The aged doge, displaying the gonfalon of St. Mark's, animated his followers, the city was taken, the usurping emperor fled, and the rightful monarch was restored (1203). But when he and his young son were treacherously murdered, and the patriarch of Constantinople was driven into exile, the city was again taken and given up to pillage (1204). Dandolo died the following year, and was buried beneath the dome of St. Sophia.—Two other doges of the family preceded Andrea, the last: Giovanni, who reigned from 1279 to 1289, and Francesco, from 1328 to 1339. **II. Andrea,** born in 1307, elected doge in 1343, died in 1354. In his first year of office Venice joined in the crusade proclaimed by Pope Clement VI., which ended advantageously to the republic in 1346. Great losses were caused by an earthquake in 1348, and by the defeat of the Venetian Black sea fleet under Pisani by the Genoese under Doria in 1352. In return, Dandolo, in concert with the Byzantine emperor and Aragon, destroyed the Genoese fleet off Cagliari, Aug. 29, 1353. Giovanni Visconti, the new ruler of Genoa, sent Petrarch as ambassador to Venice to negotiate for peace; but, notwithstanding the friendly relations between the poet and the doge, Andrea anew declared war against Genoa in 1354, shortly before his death. He was succeeded by Marino Faliero. Dandolo was also one of the earliest historians of Venice. He left a Latin chronicle which comprises the history of Venice from the earliest times to 1342, and compiled a portion of the Venetian laws. A new edition of the *Liber Albus*, treating of the relations of Venice with Turkey, and of the *Liber Blancus*, treating of those with the states of Italy (both based upon the chronicles and code of laws left by Dandolo), appeared in Vienna in 1854. **III. Girolamo,** an Italian author, born in Venice, July 26, 1797, died there, March 26, 1867. He served under the Austrian authorities, and in 1848–'9 under Manin, retiring after the restoration of Austrian power, and eventually, during the administration of Maximilian, becoming keeper of archives. Among his various publications are *La caduta della repubblica di Venezia e i suoi ultimi cinquant' anni* (Venice, 1858), and *Il Carmagnola* (1865). He died without issue, the last scion of the illustrious family of his name. His library was purchased for the city of Venice.

DANDOLO. I. Vincenzo, count, an Italian chemist, of a different family from the preceding, born in Venice about 1758, died there, Dec. 13, 1819. After completing his studies at the university of Padua, he established himself as a chemist in his native city. His principal work, *Fondamenti della fisico-chimica, applicati alla formazione de' corpi e de' fenomeni della natura*, appeared in 1796, and passed through six editions. When Venice was annexed to Austria in 1797, Dandolo established himself at Milan, which at that time became the capital of the Cisalpine republic. In 1799, when the Russians invaded the town, he went to Paris, where he published a work on the regeneration of mankind. Afterward he devoted himself to agricultural and industrial pursuits near Milan. When Napoleon annexed Dalmatia to his kingdom of Italy, he appointed Dandolo governor of that province, over which he presided till 1809, when it was allotted to Illyria. He then returned to Venice, with the title of count conferred upon him by the French emperor, and took no further part in public affairs except in 1813, when he coöperated in quelling an insurrection in a neighboring district. Dandolo translated many of the leading French chemical works into Italian, and, apart from his original productions on the same science, conferred a great service upon Italian industry by his works on the silkworm and Italian wines. **II. Tullio,** count, an Italian author, son of the preceding, born at Varese in September, 1801, died in Urbino, April 6, 1870. He wrote books of travels, chiefly relating to Switzerland, and historical treatises on the times of Pericles, Augustus, Marcus Aurelius, Dante, Columbus, and Leo X. Among his later works were *Storia del pensiero al medio evo* (1857), and *Storia del pensiero nei tempi moderni* (1864).

DANE, a S. county of Wisconsin; area, 1,235 sq. m.; pop. in 1870, 53,096. The surface is moderately hilly, and the soil calcareous and fertile. In the central part lie the Four Lakes, the largest of which is 6 m. long; they are connected by short channels, and have their outlet through Catfish river. In the W. part is a hill about 1,000 ft. high, called Blue Mound. The greater part of the land is occupied by prairies and oak openings. The Madison division of the Chicago and Northwestern railroad, the Prairie du Chien division, and the Sun Prairie and Madison branch of the Milwaukee and St. Paul railroad traverse it. The chief productions in 1870 were 2,535,856 bushels of wheat, 938,128 of Indian corn, 1,490,668 of oats, 148,791 of barley, 348,220 of potatoes, 71,973 tons of hay, 1,242,953 lbs. of butter, 252,525 of wool, 229,568 of tobacco, and 69,273 of hops. There were 19,416 horses, 17,891 milch cows, 19,120 other cattle, 65,591 sheep, and 28,053 swine; 12 flour mills, 4 manufactories of agricultural implements, 7 of boots and shoes, 21 of carriages and wagons, 5 of furniture, 12 of saddlery and harness, 3 of sashes,

doors, and blinds, 2 of woollen goods, 6 breweries, and 1 bookbindery. Capital, Madison, which is also the capital of the state.

DANE, Nathan, an American jurist, born in Ipswich, Mass., Dec. 27, 1752, died in Beverly, Feb. 15, 1835. He graduated at Harvard college in 1778, studied law in Salem, and commenced its practice in Beverly in 1782, where he resided until his death. From 1782 to 1785 he was a member of the house of representatives of Massachusetts; in 1785, '86, and '87, a delegate to the continental congress; in 1790, '94, '96, '97, and '98, a member of the senate of Massachusetts; in 1795, a commissioner to revise the laws of that state; in 1811, to revise and publish the charters which had been granted therein; and again in 1812, to make a new publication of the statutes. In 1794 he was appointed a judge of the court of common pleas for Essex county, and took the oaths of office, but almost immediately resigned. In 1812 he was chosen a presidential elector; in 1814 he was a member of the Hartford convention, and in 1820 of the convention for revising the constitution of Massachusetts; but a deafness which had been growing upon him for some years had at this time so much increased that he declined to take his seat in the convention. As a lawyer, he was among the most learned in the state, and his large and diversified experience gave him great ability and success. While a delegate from Massachusetts to the continental congress in 1786, he drafted the ordinance providing for the government of the vast territory north and west of the Ohio river, which was adopted by congress without a single alteration, July 13, 1787. The clause in it which has been the subject of most frequent and emphatic remark is that which provides "that there shall be neither slavery nor involuntary servitude in the said territory." He also incorporated in this ordinance a prohibition against all laws impairing the obligation of contracts, which the convention that formed the constitution of the United States a few months afterward extended to all the states of the Union, by making it a part of that constitution. In 1829 he gave $10,000 (adding $5,000 more in 1831) for the foundation of the Dane professorship of law in the law school of Harvard university, with the request that his friend Judge Story should occupy the chair, which he did until his death. During 50 years he devoted his Sundays (the hours of public worship alone excepted) to theological studies, generally reading the Scriptures in their original languages. He published an "Abridgment and Digest of American Law (9 vols. large 8vo, 1823–'9).

DANEGELT (Sax. *gelt*, money), an ancient tax paid by the Saxons in England, either for buying peace with the Danes, or for making preparations against the inroads of that nation. It was first paid in 991, when a band of Northmen attacked Ipswich, and advanced through an unguarded country as far as Maldon. Instead of meeting the enemy in the field, King Ethelred accepted the counsel of his nobles, and purchased the retreat of the invaders by a bribe of £10,000 in silver. This soon became a permanent tax under the name of Danegelt, assessed upon landed property. The last instance of its payment was in 1173.

DANICAN, François André (better known as Philidor), a French composer and chess player, born at Dreux about 1727, died in London, Aug. 30, 1795. His father and grandfather were musicians, and the latter, who was flutist to Louis XIII., received from that monarch the surname of Philidor, which had been borne by a celebrated hautboyist of the time, and this name was retained by his descendants. André was admitted at an early age as chorister in the chapel of Louis XV., studied composition under Campra, and at 15 produced a motet for a full choir, which was performed before the court at Versailles. After leaving the chapel he supported himself by teaching and copying music, and in 1745 commenced a tour through Germany, Holland, and England, in the course of which he exhibited his skill in the game of chess, which he had begun to cultivate a short time before. He returned to Paris in 1754, and devoted himself chiefly to his profession. Failing to receive the appointment of *maître de la chapelle*, he wrote for the *opéra comique* with considerable success. In 1777 he revisited London, where he published his treatise on chess. He continued to compose for the comic stage, and produced airs and choruses for the *Carmen Seculare* of Horace, performed in London in 1779; but the last ten years of his life were almost entirely devoted to chess, which had become a passion with him. In Paris he played at the *café de la régence*, where the greatest players in France assembled, and in London at Parsloe's club in St. James's street. At both places he maintained a supremacy which reached its highest point when he performed what was then considered the marvellous feat of playing three simultaneous games blindfolded, against skilful antagonists, each of whom he defeated. A month before his death he played two games in the same manner, and was again successful. His death was hastened by grief at the refusal of the French government to allow him to return to his native country. His treatise on chess has been frequently republished in foreign languages.—See "Life of Philidor," by G. Allen (Philadelphia, 1863).

DANIEL (*i. e.*, according to some interpreters, "God is my judge;" according to others, "judge of God"), a Hebrew prophet, by whom a book of the Old Testament which bears his name claims to have been written. Nearly all we know of the prophet is to be found in the book of Daniel. Ezekiel mentions Daniel as a pattern of righteousness and wisdom, but according to some interpreters his words refer to a prophet of that name who lived at some earlier time. According to the book of Daniel,

he was descended from one of the highest families in Judah. As a youth we find him in Babylon, whither he had been carried with three other Hebrew youths of rank, Hananiah, Mishael, and Azariah, at the first deportation of the people of Judah in the reign of Jehoiakim. He and his companions were selected for instruction in the language and literature of the Chaldeans, with a view to being employed in the service of the court. On this occasion the names of all four were changed, and Daniel was henceforth called Belteshazzar, *i. e.*, prince of Belus or Bel. A short time after he interpreted a dream of the king so much to the latter's satisfaction that he rose into high favor, and was intrusted with the governorship of the province of Babylon, and the head inspectorship of the sacerdotal caste. Considerably later, in the reign of Nebuchadnezzar, he interpreted another dream of his, to the effect that in consequence of his pride he would be deprived for a time of his reason and his throne, and, after being exiled from the abodes of men, would be eventually restored to his senses and his rank. During the reign of Evil-Merodach, the immediate successor of Nebuchadnezzar, no mention is made of Daniel, nor in the short reign of his successor; but in the last Chaldean reign he is mentioned in connection with the closing scene of Belshazzar's life. Belshazzar having had a remarkable vision of a handwriting on the wall, which none of the wise men of the Chaldeans could interpret, Daniel was called in, read the writing, and announced the impending catastrophe of the empire. During this reign Daniel had two prophetic visions (ch. vii., viii.). After the conquest of Babylon by the united powers of Media and Persia, Daniel devoted himself during the short rule of Darius the Mede to the affairs of his people and their possible return from exile, the time of which, according to the prophecies of Jeremiah, was fast approaching. His elevation was not beheld without malice and envy, and his enemies resolved to compass his overthrow. Under plausible pretences they secured the passage of a law that for a certain time no one in the realm should be allowed to offer any petition to any god or man except the king, on penalty of being thrown into a den of lions. Daniel, as they anticipated, was the first to disregard this law, by continuing his habit of worshipping God in prayer three times a day with his window open. The consequence was, that Daniel was cast into the den of lions, but was miraculously preserved; and this was the means of his being raised to more exalted honor (ch. vi.). He at last beheld his people restored to their own land, his position at the court of the Medo-Persian government having given him the opportunity of rendering material aid to this end.—The Book of Daniel occupies but a third rank in the Hebrew canon, being inserted not among the prophets, but in the Hagiographa. The reason for this arrangement appears to have been that Daniel, in the opinion of the compilers of the canon, stood to the theocracy in a different relation from those for whom prophecy, or the announcing of divine messages, was a profession. In the Greek and Latin translations of the Old Testament the book of Daniel follows immediately after Ezekiel. The smaller portion of the book (ch. i. 1, to ii. 4, and ch. viii. to xii.) is written in Hebrew, the larger portion (ch. ii. 4, to vii. 28) in the Chaldee language; but the unity of the book is now generally conceded. The book divides itself into two parts, historical and prophetic. The substance of the former, so far as it relates to the life of Daniel, has been given above. The latter contains the famous visions of the four beasts coming up from the sea, succeeded by the appearance of "the son of man," denoting, as the prophet tells us, four kingdoms and the Messianic kingdom, and of the ram with his two unequal horns, and the he goat with the great horn which was broken and replaced by four new horns, out of one of which another small terrible horn grew, which caused great devastations. The book then interprets the 70 years during which, according to Jeremiah, Jerusalem was to lie waste, as so many weeks of years (7×70 years), and describes at greater length the conflict of the last of the four world-kingdoms with the Messianic kingdom, which at length issues from it as victor. This prophetic portion of the book of Daniel has a special importance in Christian theology, as for more than a century it has constituted a chief bone of contention between the old orthodox theology (Roman Catholic, Greek Catholic, and Evangelical Protestant) on the one hand, and all the liberal schools of Protestantism on the other. The view which until the latter half of the 18th century was held by the entire Christian church, and which more recently has been defended by Hengstenberg, Hävernick, Delitzsch, Pusey, Auberlen, Davidson, and others, assumes that Daniel, as the book itself claims, was the author, and that the visions therefore represent real prophecies, the most minute in their details which are to be found in the Old Testament. Most of these theologians regard the Roman empire as the last of the four kingdoms. The view of the liberal theologians has been chiefly developed by Eichhorn, Bertholdt (*Einleitung*, 1812), Bleek (1822), De Wette (*Einleitung*, 7th ed., 1852), Lengerke (*Das Buch Daniel*, 1835), Ewald (*Die Propheten des Alten Bundes*, 1841), Hitzig (*Das Buch Daniel*, 1850), and Lücke (*Einleitung in die Offenbarung Johannis*, 1852). They assume that the place of the book among the Hagiographa, its omission in the list of books mentioned by Jesus Sirach, historical errors and anachronisms, and the occurrence of Greek words and of doctrines which in the time of Daniel were entirely unknown to the Jews, point to a much later origin. The writers of this school have generally come to the conclusion that

the book was written by a Jew at the time of the greatest oppression of the Jews by the Syrians, in or about the year 167 B. C. The last of the four empires, according to them, is that of Alexander the Great, the he goat with the great horn which is replaced by small horns; and the terrible small horn that grew out of these is the cruel oppressor of Israel, Antiochus Epiphanes.—The Greek and Latin translations contain several pieces which are not in the Hebrew, and which therefore belong to the parts of the Old Testament called by the Catholics deutero-canonical, and by the Protestants apocryphal. They are contained in the Apocrypha of the English Bible under the titles, "The Song of the Three Holy Children," "The History of Susannah," and "The History of Bel and the Dragon."

DANIEL, Hermann Adalbert, a German theologian and geographer, born in Köthen, Nov. 18, 1812, died in Leipsic, Sept. 13, 1872. He studied in Halle, and was a professor there till 1870, when he retired to Dresden. As a geographer he is one of the most eminent followers of Ritter, whose life he sketched in the *Preussische Jahrbücher*. His works include *Thesaurus Hymnologicus* (5 vols., 1841–'56), *Codex Liturgicus* (3 vols., 1847–'54), *Lehrbuch der Geographie* (31st ed., 1872), *Leitfaden der Geographie* (68th ed., 1872), and *Handbuch der Geographie* (3d ed., 4 vols., 1870–'72).

DANIEL, Samuel, an English author, born near Taunton, Somersetshire, in 1562, died at Beckington, Oct. 14, 1619. He was the son of a music master, and was educated at Magdalen hall, Oxford. He devoted himself while in the university to the study of poetry and history, and left it in 1582 without taking his degree. He resided for some time with the earl of Pembroke, and after the death of Spenser was voluntary laureate to Queen Elizabeth, but was superseded by Ben Jonson. During the reign of James he was appointed gentleman extraordinary and groom of the privy chamber to Queen Anne. His poems are numerous, comprising an epic in six books on the wars of the Roses, dramatic pieces, and short poems. He wrote in prose a "Defence of Rhyme," and a history of England from the Norman conquest to the end of the reign of Edward III.

DANIELL, John Frederick, an English physicist, born in London, March 12, 1790, died there, March 13, 1845. He was a pupil of Brande, and afterward began business as a sugar refiner. In 1816 he founded, in connection with Prof. Brande, the "Quarterly Journal of Science," of which they published the first 20 volumes. In 1820 he published a description of a new hygrometer, by which for the first time regular and accurate observations on the dryness and moisture of the air were made practicable. His great work, "Meteorological Essays" (1823), was the first attempt to explain the principles of meteorology by the general laws regulating the temperature and constitution of gases and vapors. One of the most interesting of his theories was that by which he accounted for the horary oscillations or periodic daily rise and fall of the barometer, and predicted a fall near the poles coincident with the rise at the equator, a conjecture afterward confirmed by observation. In 1824 he published an essay on "Artificial Climate," and about the same time became managing director of the continental gas company. He also invented a process for extracting inflammable gas from resin. On the establishment of King's college in 1831 he was appointed professor of chemistry, which office he held until his death. About 1831 he published an account of his new pyrometer for measuring high temperatures, such as are employed in fusing metals, in furnaces, &c. Thenceforth he gave his attention principally to voltaic electricity. In 1836, in a paper communicated to the royal society, he described his improvement in the voltaic battery, by which he showed how a powerful and continuous current may be kept up for an unlimited period. In 1839 appeared his "Introduction to Chemical Philosophy," a treatise on the molecular forces. He was the only person who ever received the three medals in the gift of the royal society, of which he was a zealous member, and for the last six years of his life foreign secretary. He expired suddenly of apoplexy.

DANIELL, Samuel, an English artist and traveller, born in 1777, died in the island of Ceylon in 1811. He spent three years at the Cape of Good Hope, and then visited the interior of Africa, making sketches of the scenery and people, which he brought to England in 1804, when they were published, with an account of the animals of southern Africa. He afterward went to the island of Ceylon, and during a residence of six years collected a large amount of similar materials, one volume of which was published, with a description of that country and its inhabitants, in 1808.

DANIELL, Thomas, an English landscape painter and engraver, born in 1749, died in 1840. In company with his nephew, William, he made an extraordinary journey through India, preparing sketches and illustrations of the scenery, which were afterward published. He was originally a heraldry painter, and became fellow of the royal, Asiatic, and antiquarian societies. He published several works on India.

DANIELL, William, an English painter and engraver, born in 1769, died in 1837. He set out at the age of 14, in company with his uncle Thomas, on an artistic exploration of the peninsula of Hindostan. They commenced their journey at Cape Comorin, and sketched almost everything beautiful or interesting in the country between that point and Serinagur, in the Himalaya mountains. They were occupied ten years in this undertaking. Of their immense number of sketches, they selected and published a portion in a great work entitled "Oriental Scenery" (6 vols. folio, 1808). Five of these volumes were engraved by William, or under

his direction; the other by Thomas, after drawings by James Wales. William also published "A Picturesque Voyage to India," "Zoögraphy," "Animated Nature," &c., and from 1814 to 1825 was engaged in making sketches for "A Voyage round Great Britain," a work similar to that on India. Besides these, he executed many oil paintings of Indian scenery, among them a panorama of Madras, the "City of Lucknow," and the "Elephant Hunt," and contributed to the "Oriental Annual."

DANISH LANGUAGE AND LITERATURE. See DENMARK.

DANNECKER, Johann Heinrich von, a German sculptor, born at Waldenbuch, near Stuttgart, Oct. 15, 1758, died in Stuttgart, Dec. 8, 1841. His father was groom to the duke of Würtemberg, and Dannecker grew up with a very limited education. He manifested a taste for drawing at a very early age, and for want of better materials resorted to the yard of a stonecutter, and covered the slabs there with his designs. In 1771 he entered the military school established by the duke at Ludwigsburg. When he was 18 he obtained a prize for his model of Milo of Crotona. He here formed a friendship with Schiller, in whose memory he sculptured a noble statue and several busts, one of them of colossal size. On leaving the school in 1780, he was appointed statuary to the court, and three years afterward went to Paris on foot, having only his salary as statuary, about $125 a year. He remained two years in Paris, studying under Pajou, and then made his way on foot to Rome, where he made statues of Ceres and Bacchus, which procured his admission into the academies of Milan and Bologna. In 1790, having spent five years in Rome, he returned to his native country, and was made a professor of the fine arts in the academy of Stuttgart. In 1796 he produced several works in marble, among them a Sappho; and afterward he was employed by Frederick of Würtemberg upon a monument to Count Zeppelin, representing a figure of Friendship weeping over a coffin. Next he made his Ariadne, and in 1812 he was employed by King Frederick on a statue of Cupid. His greatest work is his colossal statue of Christ, on which he spent eight years; this was ordered by the empress-mother of Russia, and presented to her son Alexander I. In 1826 he executed a statue of St. John, which is also ranked with his best productions. An account of the life and works of Dannecker was published at Hamburg in 1841, with illustrations of his principal works.

DANNEMORA, a parish of Sweden, in the län and about 23 m. N. of the city of Upsal; pop. about 1,000. It contains celebrated iron mines, which are situated in a marshy plain surrounded by three inland lakes. The principal mine is about 9,000 ft. long, 2,000 ft. broad, and 500 ft. deep. There are about 80 mines, which are protected against flooding from the lakes by a dam of hewn granite, rising in some places to a height of nearly 40 ft. The ore is obtained by blasting, and yields on an average 40 per cent. of pure iron. The annual production is estimated at upward of 30,000 tons. It is extensively used for making steel, being regarded as the best of its kind. About a mile from Dannemora are the forges of Österby, where the ore is smelted by charcoal, and the iron prepared for exportation. Among the neighboring mining places, which are generally designated by the common name of the Dannemora works, are Löfsta, Gimo, Forsmark, Carlholm, Strömsberg, and Ullfors.

DANNEMORA, a town of Clinton co., N. Y., 150 m. N. of Albany, formed from Beekmantown in 1854; pop. in 1870, 1,512. It is the seat of Clinton state prison, which in 1871 contained 529 convicts, mostly employed in the neighboring iron works and mines.

DANSVILLE, a village in the town of North Dansville, Livingston co., New York, on a branch of the Erie railway, and at the terminus of the Genesee Valley canal, 38 m. S. of Rochester, and 62 m. E. S. E. of Buffalo; pop. in 1870, 3,387; of the town, 4,015. It is situated at the head of the Canaseraga valley, a branch of the Genesee valley, in the midst of a very fertile district, and is a place of considerable business, containing 63 stores, 4 carriage shops, 3 tanneries, 4 flour mills, 2 iron founderies and machine shops, 1 planing mill, 1 shingle factory, 1 pail and tub factory, 3 paper mills, 2 picture galleries, 8 nurseries occupying an aggregate area of 500 acres, 2 banks, and 4 insurance offices. There is also an important trade in grain and lumber. Dansville is especially noted as the seat of a health institute, known as "Our Home on the Hill-side." Its site is about 150 ft. up the slope of a steep hill, 800 ft. high, which forms the E. wall of the Canaseraga valley. The institute is supplied with water of great purity from a spring 250 ft. above. The home was established about 15 years ago, and now (1873) contains about 350 patients. The Dansville seminary (Methodist) was founded in 1858, and in 1871 had 116 pupils. There are also about a dozen select and district schools, two weekly newspapers, and eight churches.

DANTAN, Jean Pierre, a French sculptor, born in Paris, Dec. 28, 1800, died in Baden, Sept. 7, 1869. He studied in Paris, and then went to Italy, where he executed a bust of Pope Pius VIII. Upon his return to France he devoted himself to caricature, and acquired distinction by his humorous and grotesque busts of the leading celebrities of Paris and London.

DANTE (contracted from DURANTE) **DEGLI ALIGHIERI,** an Italian poet, born in Florence, May 14, 1265, died in Ravenna, Sept. 14, 1321. His descent is said to have been derived from a younger son of the great Roman family of the Frangipani, classed by the popular rhyme with the Orsini and Colonnas:

> Colonna, Orsini e Frangipani
> Prendono oggi e pagano domani.

That his ancestors had been long established in Florence is inferred from some expressions of the poet, and from their dwelling having been situated in the more ancient part of the city. The most important fact of his genealogy is, that he was of mixed race, the Alighieri being of Teutonic origin. It is supposed, from a passage in Boccaccio's life of Dante, that Alighiero the father was still living when the poet was nine years old. If so, he must have died soon after, for Leonardo Aretino says Dante lost his father while yet a child. Of the order of Dante's studies nothing can be certainly affirmed. His biographers send him to Bologna, Padua, Paris, Naples, and even Oxford. All are doubtful, Paris and Oxford most of all, and the dates utterly undeterminable. As to the nature of his studies, there can be no doubt that he went through the *trivium* (grammar, dialectics, rhetoric) and the *quadrivium* (arithmetic, music, geometry, and astronomy) of the then ordinary university course. To these he afterward added painting, or at least drawing, theology, and medicine. He is said to have been the pupil of Cimabue, and was certainly the friend of Giotto, the designs for some of whose frescoes at Assisi and elsewhere have been wrongly attributed to him. To prove his love of music, the episode of Casella were enough, even without Boccaccio's testimony. The range of Dante's acquirements would be encyclopædic in any age, but at that time it was literally possible to master all that was to be known, and he seems to have accomplished it. The *Convito* gives us a glance into Dante's library. We find Aristotle (whom he calls the philosopher, the master) cited 76 times; Cicero, 18; Albertus Magnus, 7; Boëthius, 6; Plato (at second hand), 4; Aquinas, Avicenna, Ptolemy, the Digest, Lucan, and Ovid, 3 each; Virgil, Juvenal, Statius, Seneca, and Horace, twice each; and Algazzali, Alfragan, Augustine, Livy, Orosius, and Homer (at second hand), once. Of Greek he seems to have understood little; of Hebrew and Arabic a few words. But Dante acquired perhaps the better part of his education in the streets of Florence, and later in those wanderings which led him (as he says) wherever the Italian tongue was spoken. Nothing seems to have escaped his eye, or failed to be photographed upon his sensitive brain, to be afterward fixed for ever in the *Commedia*. The few well ascertained facts of Dante's life may be briefly stated. In 1274 he first saw Beatrice Portinari. In 1289 he fought at Campaldino on the side of the Guelphs, who there utterly routed the Ghibellines, and where, he says, "I was present, not a boy in arms, and where I felt much fear, but in the end the greatest pleasure from the various changes of the fight." In the same year he assisted at the siege and capture of Caprona. In 1290 died Beatrice, married to Simone dei Bardi, precisely when is uncertain, but before 1287, as appears by a mention of her in her father's will, bearing date Jan. 15 of that year. Dante's own marriage is assigned to various years, ranging from 1291 to 1294; but the earlier date seems the more probable, as he was the father of seven children (the youngest a daughter, named Beatrice) in 1301. His wife was Gemma dei Donati, and through her Dante, whose family was of the lesser nobility, became nearly connected with Corso Donati, the head of a powerful clan of the *grandi* or greater nobles. In 1293 occurred what is called the revolution of Gian Della Bella, in which the priors of the trades took the power into their own hands and made nobility a disqualification for office. A noble was defined to be any one who counted a knight among his ancestors. Della Bella was exiled in 1295, but the nobles did not regain their power. On the contrary, the citizens quarrelled among themselves, and subdivided into the *popolani grossi* and *popolani minuti*, or greater and lesser trades, a distinction of gentility somewhat like that between wholesale and retail tradesmen. The *grandi* continuing turbulent, many of the lesser nobility, among them Dante, drew over to the side of the citizens, and between 1297 and 1300 there is found inscribed in the book of the physicians and apothecaries, *Dante d'Aldighiero, degli Aldighieri, poeta fiorentino*. In 1300 we find him elected one of the priors of the city. In order to a perfect misunderstanding of everything connected with the Florentine politics of this period, one has only to study the various histories. A few words, however, are necessary, if only to make the confusion palpable. The rival German families of Welfs and Waiblingens had given their names, softened into Guelfi and Ghibellini, to two parties in northern Italy, representing respectively the adherents of the pope and of the emperor, but serving very well as rallying points in all manner of subsidiary quarrels. The nobles, especially the greater ones, were commonly Ghibellines, or imperialists; the bourgeoisie were very commonly Guelphs, or supporters of the pope. Sometimes, however, the party relation of nobles and burghers to each other was reversed, but the names Guelph and Ghibelline always substantially represented the same things. The family of Dante had been Guelphic, but just before his assumption of the priorate a new complication had arisen. A family feud, beginning at the neighboring city of Pistoja, between the Cancellieri Neri and Cancellieri Bianchi, had extended to Florence, where the Guelphs took the part of the Neri and the Ghibellines of the Bianchi. The city was instantly in a ferment of street brawls. Both parties appealed at different times to the pope, who sent two ambassadors, first a bishop and then a cardinal. Both pacificators soon flung out again in a rage, after adding the new element of excommunication to the causes of confusion. It was in the midst of these things that Dante became one of the six priors (June, 1300), an office which

the Florentines had made bimestrial, in order apparently to secure at least six constitutional chances of revolution in the year. He advised that the leaders of both parties should be banished to the frontiers, which was forthwith done, the ostracism including his relative Corso Donati among the Neri, and his most intimate friend, the poet Guido Cavalcanti, among the Bianchi. They were all permitted to return before long, but after Dante's term of office was over. Affairs getting worse (1301), the Neri, with the connivance of the pope (Boniface VIII.), entered into an arrangement with Charles of Valois, who was preparing an expedition to Italy. Dante was meanwhile sent on an embassy to Rome by the Bianchi, who still retained all the offices at Florence. It is the tradition that he said in setting forth: "If I go, who remains? and if I stay, who goes?" Whether true or not, the story implies what was certainly true, that the council and influence of Dante were of great weight with the more moderate of both parties. On Oct. 31, 1301, Charles took possession of Florence in the interest of the Neri. Dante being still at Rome (Jan. 27, 1302), sentence of exile was pronounced against him and others, with a heavy fine to be paid within two months; the charge against him being pecuniary malversation in office. The fine not paid (as it could not be without admitting the justice of the charges, which Dante scorned even to deny), in less than two months (March 10, 1302) a second sentence was registered by which he with others was condemned to be burned alive if taken within the boundaries of the republic. From this time the life of Dante becomes uncertain. He was now necessarily identified with his fellow exiles, and shared in their attempts to reinstate themselves by force of arms. He was one of their council of twelve, but withdrew from it on account of the folly of their measures. From the *Ottimo Comento*, written at least in part by a contemporary as early as 1333, we learn that Dante soon separated himself from his companions in misfortune, with mutual discontents and recriminations. During the 19 years of his exile, it would be hard to say where he was not. In certain districts of northern Italy there is scarce a village that has not its tradition of him, authentic or otherwise; its *sedia*, *rocca*, *spelonca*, or *torre di Dante*. After his banishment we find a definite trace of him first at Arezzo with Uguccione della Faggiuola; then at Siena; then at Verona with the Scaligeri. By the election of the emperor Henry VII. (of Luxemburg, November, 1308), and the news of his proposed expedition into Italy, the hopes of Dante were raised to the highest pitch. Henry entered Italy in October, 1310, and received the iron crown of Lombardy at Milan on the day of Epiphany, 1311. His movements being slow, and his policy undecided, Dante addressed him a famous letter, urging him to crush first the "Hydra and Myrrha" Florence, as the root of all the evils of Italy (April 16, 1311). To this year we must probably assign the new decree by which the seigniory of Florence recalled a portion of the exiles, but excepting Dante and others by name. The undertaking of Henry, after an ill-directed dawdling of two years, ended in his death at Buonconvento, Aug. 24, 1313. According to Balbo, Dante spent the time from August, 1313, to November, 1314, in Pisa and Lucca, and then took refuge at Verona with Can Grande della Scala (see CANE I. DELLA SCALA), where he remained till 1318. Foscolo with equal positiveness sends him, immediately after the death of Henry, to Guido da Polenta at Ravenna, and makes him join Can Grande only after the latter became captain of the Ghibelline league in December, 1318. In 1316 the government of Florence issued a new decree allowing the exiles to return on conditions of fine and penance. Dante rejected the offer in an indignant letter, saying: "Is this then the glorious return of Dante Alighieri to his country after nearly three lustres of suffering exile? Did an innocence patent to all merit this? This, the perpetual sweat and toil of study? Far from a man the housemate of philosophy be so rash and earthen-hearted a humility as to allow himself to be offered up bound like a schoolboy or a criminal! Far from a man the preacher of justice to pay those who have done him wrong as for a favor! This is not the way of returning to my country; but if another can be found that shall not derogate from the fame and honor of Dante, that I will enter on with no lagging steps. For if by none such Florence may be entered, by me then never! Can I not everywhere behold the mirrors of the sun and stars? Speculate on sweetest truths under any sky without first giving myself up inglorious, nay, ignominious, to the populace and city of Florence? Nor shall I want for bread." Whatever the date of Dante's visit to Can Grande, or the length of his stay with him, it is certain that he was in Ravenna in 1320, and that on his return thither from an embassy to Venice, he died in 1321. He was buried at Ravenna under a monument built by his friend Guido Novello. Dante is said to have dictated the following inscription for it on his deathbed:

JVRA MONARCHIÆ SVPEROS PHLEGETHONTA LACVSQVE
LVSTRANDO CECINI VOLVERVNT FATA QVOVSQVE
SED QVIA PARS CESSIT MELIORIBVS HOSPITA CASTRIS
AVCTOREMQVE SVVM PETIIT FELICIOR ASTRIS
HIC CLAVDOR DANTES PATRIIS EXTORRIS AB ORIS
QVEM GENVIT PARVI FLORENTIA MATER AMORIS.

Of which this rude paraphrase may serve as a translation:

The rights of Monarchy, the Heavens, the Stream of Fire, the Pit,
In vision seen, I sang as far as to the Fates seemed fit;
But since my soul, an alien here, hath flown to nobler wars,
And, happier now, hath gone to seek its Maker 'mid the stars,
Here am I Dante shut, exiled from the ancestral shore,
Whom Florence, the of all least-loving mother, bore.

—Giovanni Villani, a contemporary of Dante, thus sketches him: "This man was a great scholar in almost every science, though a layman; was a most excellent poet, philosopher, and rhetorician; perfect, as well in composing and versifying as in haranguing; a most noble speaker. . . . . This Dante, on account of his learning, was a little haughty, and shy, and disdainful, and, like a philosopher almost ungracious, knew not well how to deal with unlettered folk." Benvenuto da Imola tells us that he was very abstracted. Boccaccio paints him in this wise: "Our poet was of middle height; his face was long, his nose aquiline, his jaw large, and the lower lip protruding somewhat beyond the upper; a little stooping in the shoulders; his eyes rather large than small; dark of complexion; his hair and beard thick, crisp, and black; and his countenance always sad and thoughtful. His garments were always dignified, the style such as suited ripeness of years; his gait was grave and gentlemanlike; and his bearing, whether public or private, wonderfully composed and polished. In meat and drink he was most temperate, nor was ever any more zealous in study or whatever other pursuit. He spoke seldom, save when spoken to, though a most eloquent person. In his youth he delighted especially in music and singing, and was intimate with almost all the singers and musicians of his day. He was much inclined to solitude, and familiar with few, and most assiduous in study as far as he could find time for it. Dante was also of marvellous capacity and the most tenacious memory." Various anecdotes of him are related by Boccaccio, Saccheti, and others, none of them probable, and some of them at least 15 centuries old when revamped. One clear glimpse we get of him from the *Ottimo Comento*, the author of which says: "I, the writer, heard Dante say that never a rhyme had led him to say other than he would, but that many a time and oft he had made words say for him what they were not wont to express for other poets." Looked at outwardly, the life of Dante seems to have been an utter and disastrous failure. What its inward satisfactions must have been, we, with the *Paradiso* open before us, can form some faint conception. To him, longing with an intensity which only the word *Dantesque* will express, to realize an ideal upon earth, and continually baffled and misunderstood, the far greater part of his mature life must have been labor and sorrow. At the end of the *Vita nuova*, his first work, Dante wrote down the aspiration that God would take him to himself after he had written of Beatrice such things as were never yet written of woman. It was literally fulfilled when the *Commedia* was finished 25 years later.—Scarce was Dante at rest in his grave when Italy felt instinctively that this was her great man. In 1329 Cardinal Poggetto caused Dante's treatise *De Monarchia* to be publicly burned at Bologna, and proposed further to dig up and burn the bones of the poet at Ravenna, on the ground that he was a heretic; but so much opposition was roused that he thought better of it. Yet this was during the pontificate of John XXII., the reproof of whose simony Dante puts in the mouth of St. Peter, who declares his seat vacant, whose damnation the poet himself seems to prophesy, and against whose election he had endeavored to persuade the cardinals in a vehement letter. In 1350 the republic of Florence voted 10 golden florins to be paid to Dante's daughter Beatrice, a nun in the convent of Santa Chiara at Ravenna. In 1396 Florence voted a monument, and begged in vain for the metaphorical ashes of the man of whom she had threatened to make literal cinders if she could catch him alive. In 1429 she begged again, but Ravenna, a dead city, was tenacious of the dead poet. In 1519 Michel Angelo would have built the monument, but Leo X. refused to allow the sacred dust to be removed. Finally, in 1829, 508 years after the death of Dante, Florence got a cenotaph fairly built in Santa Croce, ugly beyond even the usual lot of such, with three colossal figures on it: Dante in the middle, Italy on one side, and Poesy on the other. The tomb at Ravenna, built originally in 1483, by Cardinal Bembo, was restored by Cardinal Corsi in 1692, and finally rebuilt in its present form by Cardinal Gonzaga in 1780, all three of whom commemorated themselves in Latin inscriptions. It is a little shrine covered with a dome, not unlike the tomb of a Mohammedan saint, and has been the chief magnet which draws foreigners and their gold to Ravenna. In May, 1865, Ravenna, in common with all Italy, celebrated the 600th anniversary of the birth of Dante; and in preparing for the festival a chest containing the bones of the poet was discovered concealed in a cavity near the mausoleum, where they had been hidden in the 17th century under an apprehension that they might be stolen by the Florentines. They were examined by a committee, pronounced to be genuine, and reinterred in the mausoleum. At Florence the anniversary was celebrated with great pomp, and on May 14 of the following year a colossal statue of the poet was erected in the square of Santa Croce. In 1373 (Aug. 9) Florence instituted a chair of the *Divina Commedia*, and Boccaccio was named first professor. He accordingly began his lectures on Sunday, Oct. 3, following, but his comment was broken off abruptly at the 17th verse of the 17th canto of the *Inferno* by the illness which ended in his death, Dec. 21, 1375. Among his successors were Filippo Villani and Filelfo. Bologna was the first to follow the example of Florence, Benvenuto da Imola having begun his lectures, according to Tiraboschi, as early as 1375. Chairs were established also at Pisa, Venice, Piacenza, and Milan before the close of the century. The lectures were delivered in the churches and on feast days. Balbo reckons that the MS. copies

of the *Divina Commedia* made during the 14th century, and now existing in the libraries of Europe, are more numerous than those of any other work, ancient or modern, made during the same period. Between the invention of printing and the year 1500 more than 20 editions were published in Italy, the earliest in 1472. During the 16th century there were 40 editions; during the 17th, a period for Italy of skeptical dilettantism, only 3; during the 18th, 34; and during the first half of the 19th, at least 80. The first translation was into Spanish, in 1428. M. St. René Taillandier says that the *Commedia* was condemned by the inquisition in Spain; but according to Foscolo, it was only the commentary of Landino and Vellutello, and a few verses in the *Inferno* and *Paradiso*, which were condemned. The first French translation was that of Grangier (1596); but the study of Dante struck no root in France till the present century. Rivarol, who translated the *Inferno* in 1783, was the first Frenchman to divine the wonderful force and vitality of the *Commedia*. The expressions of Voltaire represent very well the opinion of cultivated persons in respect of Dante in the middle of the 18th century. He says: "The Italians call him divine; but it is a hidden divinity; few people understand his oracles. He has commentators, which perhaps is another reason for his not being understood. His reputation will go on increasing, because scarce anybody reads him." To Father Bettinelli he writes: "I estimate highly the courage with which you have dared to say that Dante was a madman and his work a monster." But he adds: "There are found among us, and in the 18th century, people who strive to admire imaginations so stupidly extravagant and barbarous." Elsewhere he says that the *Commedia* was "an odd poem, but gleaming with natural beauties, a work in which the author rose in parts above the bad taste of his age and his subject, and full of passages written as purely as if they had been of the time of Ariosto and Tasso." It is curious to see the fascination which Dante exercised over a nature so opposite to his own. At the beginning of this century Chateaubriand speaks of Dante with vague commendation, evidently from a very superficial acquaintance, and that only with the *Inferno*, probably from Rivarol's version. Since then there have been four or five French versions in prose or verse, including one by Lamennais. But the austerity of Dante will not condescend to the conventional elegance which makes the charm of French, and the most virile of poets cannot be adequately rendered in the most feminine of languages. Yet in the works of Fauriel, Ozanam, Ampère, and Villemain, France has given a greater impulse to the study of Dante than any other country except Germany. Into Germany the *Commedia* penetrated later. How utterly Dante was unknown there in the 16th century is plain from a passage in the "Vanity of the Arts and Sciences" of Cornelius Agrippa, where he is spoken of among the authors of lascivious stories. The first German translation was that of Kannegiesser (1809). Versions by Streckfuss, Kopisch, and Prince John (afterward king) of Saxony followed. Goethe seems never to have given that attention to Dante which he might have been expected to bestow on so imposing a moral and æsthetic phenomenon. Unless the conclusion of the second part of "Faust" be an inspiration of the *Paradiso*, there is no adequate word from him on this theme. His remarks on one of the German translations are brief, dry, and without that breadth which comes only of thorough knowledge and sympathy. But German scholarship and constructive criticism, through Witte, Kopisch, Wegele, Ruth, and others, have been of preëminent service in deepening the understanding and facilitating the study of the poet. In England, the first recognition of Dante is by Chaucer in the "Hugelin ôf Pisa" of the "Monkes Tale," and an imitation of the opening verses of the 3d canto of the *Inferno* ("Assembly of Foules"). In 1417 Giovanni da Serravalle, bishop of Fermo, completed a Latin prose translation of the *Commedia*, a copy of which was doubtless sent to England. Later we find Dante now and then mentioned, but evidently from hearsay only, till the time of Milton, who shows that he had read his works closely. Thenceforward for more than a century Dante became a mere name, used without meaning by literary sciolists. Lord Chesterfield echoes Voltaire, and Dr. Drake spoke of Darwin's "Botanic Garden" as showing the "wild and terrible sublimity of Dante"! The first complete English translation was by Boyd, of the *Inferno* in 1785, of the whole poem in 1802. Cary's admirable version appeared in 1814, and several other translations within a few years after. But it is only since 1840 that the study of Dante has become at all general. In America Prof. Ticknor was the first to devote a special course of lectures to Dante. He was followed by Longfellow in a course of lectures accompanied by translations, and in 1843 by Parsons, who rendered the first ten cantos of the *Inferno* into quatrains. Since then Longfellow has translated the entire *Divina Commedia*, and Parsons the whole of the *Inferno*. In Denmark and Russia translations of the *Inferno* have been published, besides separate volumes of comment and illustration. The veneration of Dantophilists for their master is that of disciples for their saint. Perhaps no other man could have called forth such an expression as that of Ruskin, that "the central man of all the world, as representing in perfect balance the imaginative, moral, and intellectual faculties, all at their highest, is Dante."—The writings of Dante are all (with the possible exception of the treatise *De Vulgari Eloquio*) autobiographic, and all of them, including that, are parts of a mutually related system, of which the central point is the individuality and ex-

perience of the poet. In the *Vita nuova* he recounts the story of his love for Beatrice Portinari, showing how his grief for her loss turned his thoughts first inward upon his own consciousness, and, failing all help there, gradually upward through philosophy to religion, and so from a world of shadows to one of eternal substances. It traces with exquisite unconsciousness the gradual but certain steps by which memory and imagination transubstantiated the woman of flesh and blood into a holy ideal, combining in one radiant symbol of sorrow and hope the faith which is the instinctive refuge of unavailing regret, the grace of God which higher natures learn to find in the trial which passeth all understanding, and that perfect womanhood, the dream of youth and the memory of maturity, which beckons toward the for ever unattainable. As a contribution to the physiology of genius, no other book is to be compared with the *Vita nuova.* It is more important to the understanding of Dante as a poet than any other of his works. It enables us to see how, from being the slave of his imaginative faculty, he rose by self-culture and force of will to that mastery of it which is art. We comprehend the *Commedia* better when we know that Dante could be an active, clear-headed politician and a mystic at the same time. Various dates have been assigned to the composition of the *Vita nuova.* The earliest limit is fixed by the death of Beatrice in 1290 (though some of the poems are of even earlier date), and the book is commonly assumed to have been finished by 1295; but Witte extends the term as far as 1300. The title of the book also, *Vita nuova*, has been diversely interpreted. Mr. Garrow, who published an English version of it at Florence in 1846, entitles it "The Early Life of Dante." Balbo understands it in the same way. But we are of the opinion that "New Life" is the interpretation sustained by the entire significance of the book itself.—It has been generally taken for granted that Dante was a Guelph in politics up to the time of his banishment, and that out of resentment he then became a violent Ghibelline. Not to speak of the consideration that there is no author whose life and works present so remarkable a unity and logical sequence as those of Dante, Prof. Witte has drawn attention to a fact which alone is enough to demonstrate that the *De Monarchia* was written before 1300. That and the *Vita nuova* are the only works of Dante in which no allusion whatever is made to his exile. That bitter thought was continually present to him. In the *Convito* it betrays itself often, and with touching unexpectedness. Even in the treatise *De Vulgari Eloquio*, he takes as one of his examples of style, "I have most pity for those, whosoever they are, that languish in exile, and revisit their country only in dreams." We have seen that the one decisive act of Dante's priorate was to expel from Florence the chiefs of both parties as the sowers of strife, and he tells us that he had formed a party by himself. The king of Saxony has well defined his political theory as being "an ideal Ghibellinism." Dante's want of faith in freedom was of the same kind with Milton's refusing to confound license with liberty. The argument of the *De Monarchia* is briefly this: As the object of the individual man is the highest development of his faculties, so is it also with men united in societies. But the individual can only attain that highest development when all his powers are in absolute subjection to the intellect, and society only when it subjects its individual caprices to an intelligent head. This is the order of nature, as in families, and men have followed it in the organization of villages, towns, cities. Again, since God made man in his own image, men and societies most nearly resemble him in proportion as they approach unity. But as in all societies questions must arise, so there is need of a monarch for supreme arbiter. And only a universal monarch can be impartial enough for this, since kings of limited territories would always be liable to the temptation of private ends. With the internal policy of municipalities, commonwealths, and kingdoms, the monarch would have nothing to do, only interfering when there was danger of an infraction of the general peace. This is the doctrine of the first book, enforced sometimes eloquently, always logically, and with great fertility of illustration. It is an enlargement of some of the *obiter dicta* of the *Convito.* The earnestness with which peace is insisted on as a necessary postulate of civic well-being, shows what the experience had been out of which Dante had constructed his theory. It is to be looked on as a purely scholastic demonstration of a speculative thesis, in which the manifold exceptions and modifications essential in practical application are necessarily left aside. Dante almost forestalls the famous proposition of Calvin, "that it is possible to conceive a people without a prince, but not a prince without a people," when he says: *Non enim gens propter regem, sed e converso rex propter gentem.* And in his letter to the princes and peoples of Italy on the coming of Henry VII. he bids them "obey their prince, but so as freemen preserving their own constitutional forms." He says also expressly: *Animadvertendum sane, quod cum dicitur humanum genus potest regi per unum supremum principem, non sic intelligendum est ut ab illo uno prodire possint municipia et leges municipales. Habent namque nationes, regna, et civitates inter se proprietates quas legibus differentibus regulari oportet.* Schlosser compares Dante's system with that of the United States. In some respects it resembles more the constitution of the Netherlands under the supreme stadholder, but parallels between ideal and actual institutions are always unsatisfactory. The second book is very curious. In it Dante endeavors to demonstrate the divine

right of the Roman empire to the universal sovereignty. One of his arguments is that Christ consented to be born under the reign of Augustus; another, that he assented to its jurisdiction in allowing himself to be crucified under a decree of one of its courts. The atonement could not have been accomplished unless Christ suffered under sentence of a court having jurisdiction, for otherwise his condemnation would have been an injustice, and not a penalty. Moreover, since all mankind was typified in the person of Christ, the court must have been one having jurisdiction over all mankind; and since he was delivered to Pilate, an officer of Tiberius, it must follow that the jurisdiction of Tiberius was universal. He draws an argument also from the wager of battle to prove that the Roman empire was divinely permitted, at least, if not instituted. For since it is admitted that God gives the victory, and since the Romans always won it, therefore it was God's will that the Romans should attain universal empire. In the third book he endeavors to prove that the emperor holds by divine right, and not by permission of the pope. He assigns supremacy to the pope in spirituals, and to the emperor in temporals. This was a delicate subject, and though the king of Saxony (a Catholic) says that Dante did not overstep the limits of orthodoxy, it was on account of this part of the book that it was condemned as heretical.—Though we have doubts whether we possess the treatise *De Vulgari Eloquio* as Dante wrote it, inclining rather to think that it is a copy in some parts textually exact, in others an abstract, there can be no question either of its great glossological value, or that it conveys the opinions of Dante. We put it next in order, though written later than the *Convito*, only because, like the *De Monarchia*, it is written in Latin. It is a proof of the national instinct of Dante, and of his confidence in his genius, that he should have chosen to write all his greatest works in what was deemed by scholars a *patois*, but which he more than any other man made a classic language. Had he intended the *De Monarchia* for a political pamphlet, he would certainly not have composed it in the dialect of the few. The *De Vulgari Eloquio* was to have been in four books. Whether it was ever finished it is impossible to say, but only two books have come down to us. It treats of poetizing in the vulgar tongue, and of the different dialects of Italy. The Florentines have denied its authenticity, because it does not allow the supremacy of the Tuscan. From the particularity with which it treats of the dialect of Bologna, it has been supposed to have been written in that city, or at least to furnish an argument in favor of Dante's having at some time studied there. In lib. ii. cap. 2, is a remarkable passage in which, defining the various subjects of song and what had been treated in the vulgar tongue by different poets, he says that his own theme had been right-eousness.—The *Convito* is also imperfect. It was to have consisted of 14 treatises, but, as we have it, contains only four. In the first he justifies the use of the vulgar idiom in preference to the Latin. In the other three he comments on three of his own *Canzoni*. It is an epitome of the learning of that age, philosophical, theological, and scientific. As affording illustration of the *Commedia*, and of Dante's style of thought, it is invaluable. It is reckoned by his countrymen the first piece of Italian prose, and there are parts of it which still stand unmatched for eloquence and pathos. The Italians find in it and a few passages of the *Commedia* the proof that Dante as a natural philosopher was wholly in advance of his age; that he had, among other things, anticipated Newton in the theory of gravitation. But this is as idle as the claim that Shakespeare had discovered the circulation of the blood before Harvey; and one might as well attempt to dethrone Newton because Chaucer speaks of the love which draws the apple to the earth. The truth is, it was only as a poet that Dante was great and original, and in matters of science, like all his contemporaries, he sought the guiding hand of Aristotle. Dante is assumed by many to have been a Platonist, but this is not true in the strict sense of the word. Like all men of great imagination, he was an idealist, but his direct acquaintance with Plato may be reckoned as nothing; and we consider it as having strongly influenced his artistic development for the better, that, transcendentalist as he was by nature, his habits of thought should have been made precise and his genius disciplined by a mind so severely logical as that of Aristotle. This does not conflict with what we believe to be equally true, that the Platonizing commentaries on his poem, like that of Landino, are the most satisfactory.—Besides the prose already mentioned, we have a small collection of Dante's letters, the recovery of the larger number of which we owe to Prof. Witte. They are all interesting, some of them especially so, as illustrating the prophetic character with which Dante invested himself. The longest is addressed to Can Grande della Scala, explaining the intention of the *Commedia* and the method to be employed in its interpretation.—Dante's minor poems, full of grace and depth of mystic sentiment, would have given him a high place in the history of Italian literature, even had he written nothing else. They are so abstract, however, that without the extrinsic interest of having been written by the author of the *Commedia*, they would probably find few readers. All that is certainly known in regard to the *Commedia* is that it was composed during the 19 years between Dante's banishment and his death. Attempts have been made to fix precisely the dates of the different parts, but without success. Foscolo has constructed an ingenious argument to show that no part of the poem was published before the

author's death. The question depends somewhat on the meaning we attach to the word published. In an age of manuscript, the wide dispersion of a poem so long even as a single one of the three divisions of the *Commedia* would be accomplished very slowly. But it is difficult to account for the great fame which Dante enjoyed during the latter years of his life, unless we suppose that parts at least of his greatest work had been read or heard by a large number of persons. This, however, need not imply publication; and Witte supposes even the *Inferno* not to have been finished before 1314 or 1315. In a matter where certainty is impossible, it is useless to reproduce conjectural dates. In the letter to Can Grande before alluded to, Dante himself has stated the theme of his song. He says that "the literal subject of the whole work is the state of the soul after death simply considered. But if the work be taken allegorically, the subject is man, as by merit or demerit, through freedom of the will, he renders himself liable to the reward or punishment of justice." He tells us that the work is to be interpreted in a literal, allegorical, moral, and anagogical sense, a mode then commonly employed with the Scriptures, and of which he gives the following example: "To make which mode of treatment more clear, it may be applied in the following verses: *In exitu Israel de Ægypto, domus Jacob de populo barbaro, facta est Judæa sanctificatio ejus, Israel potestas ejus.* For if we look only at the literal sense, it signifies the going out of the children of Israel from Egypt in the time of Moses; if at the allegorical, it signifies our redemption through Christ; if at the moral, it signifies the conversion of the soul from the grief and misery of sin to a state of grace; and if at the anagogical, it signifies the passage of the blessed soul from the bondage of this corruption to the freedom of eternal glory." Dante tells us that he calls his poem a comedy because it has a fortunate ending, and gives its title thus: "Here begins the comedy of Dante Alighieri, a Florentine by birth, but not in morals." The poem consists of three parts, Hell, Purgatory, and Paradise. Each part is divided into 33 cantos, in allusion to the years of the Saviour's life, for though the Hell contains 34, the first canto is merely introductory. In the form of the verse (triple rhyme) we may find an emblem of the Trinity, and in the three divisions, of the threefold state of man, sin, grace, and beatitude. Symbolic meanings reveal themselves, or make themselves suspected, everywhere, as in the architecture of the middle ages. If we except Wolfram von Eschenbach, Dante is the first Christian poet whose whole system of thought is colored in every finest fibre by a purely Christian theology. Lapse through sin, mediation, and redemption are the subjects of the three parts of the poem; or, otherwise stated, intellectual conviction of the result of sin, typified in Virgil; moral conversion after repentance, by divine grace, typified in Beatrice; reconciliation with God, and actual blinding vision of him ("the pure in heart shall see God"). The model of the poem is that of the Christian basilica: the ethnic forecourt of those who know not God; the purgatorial middle space of repentance, confession, and absolution; the altar of reconciliation, beyond and over which hangs the emblem of the Mediator, of the divine made human, that the human might learn how to become divine. Here are general rules which any Christian man may accept and find comfort in. But the poem comes nearer to us than this. It is the real history of a brother man, of a tempted, purified, and at last triumphant human soul; it teaches the benign ministry of sorrow, and that the ladder of that faith by which man climbs to the actual fruition of things not seen *ex quovis ligno non fit*, but only of the cross manfully borne. The poem is also an apotheosis of woman. In the *Commedia* the image of the middle ages, and the sentimental woman-worship of chivalry, which was at best skin-deep, is lifted in Beatrice to an ideal and universal plane. It is the same with Catholicism, with imperialism, with the scholastic philosophy; and nothing is more wonderful than the power of absorption and assimilation in this man, who could take up into himself the world that then was and reproduce it with such cosmopolitan truth to human nature, and to his own individuality, as to reduce all contemporary history to a mere comment on his vision. Like all great artistic minds, Dante was essentially conservative, and, coming upon the stage of action precisely in that period of transition when church and empire were entering upon the modern epoch of thought, he strove to preserve both by presenting the theory of both in a pristine and ideal perfection. The whole nature of Dante was one of intense belief. There is proof upon proof that he believed himself invested with a divine mission. Like the Hebrew prophets, it was back to the old worship and the God of the fathers that he called his people. In Dante's time, learning had something of a sacred character; the line was hardly yet drawn between the clerk and the possessor of supernatural powers. It was with the next generation, with the elegant Petrarch, even more truly than with the kindly Boccaccio, that the purely literary life, and that dilettantism which is the twin sister of skepticism, began. As a merely literary figure, the position of Dante is remarkable. Not only as respects thought, but as respects æsthetics also, his great poem stands a monument on the boundary line between the ancient and modern. He not only marks, but is in himself, the transition. *Arma virumque cano*, that is the motto of classic song; the things of this world and great men. Dante says, *subjectum est homo*, not *vir;* my theme is man, not a man. The scene of the old epic and drama was in this world, and its catastrophe here; Dante lays his scene in the human soul, and his fifth act in the other world. He makes himself the

chief actor of his own drama. In the *Commedia* for the first time Christianity wholly revolutionizes art, and becomes its seminal principle. But æsthetically also, as well as morally, Dante stands between the old and new, and reconciles them. The theme of his poem is purely subjective, modern, what is called romantic; but its treatment is objective (almost to realism, here and there), and it is limited by a form of classic severity. In the same way he sums up in himself the two schools of modern poetry which had preceded him, and, while essentially lyrical in his subject, is epic in the handling of it. So also he combines the deeper and more abstract religious sentiment of the Teutonic races with the scientific precision and absolute systematism of the Romantic. In one respect Dante stands alone. While we can in some sort account for such representative men as Voltaire and Goethe, or even Shakespeare, by the intellectual and moral fermentation of the age in which they lived, Dante seems morally isolated and to have drawn his inspiration almost wholly from his own internal resources. Of his mastery in style we need say little here. Of his mere language, nothing could be better than the expression of Rivarol: "His verse holds itself erect by the mere force of the substantive and verb, without the help of a single epithet." In all literary history there is no such figure as Dante, no such homogeneousness of life and works, such loyalty to idea, and such sublime irrecognition of the unessential; and there is no moral more touching than that the contemporary recognition of such a nature, so endowed and so faithful to its endowment, should be summed up in the sentence of Florence: *Igne comburatur sic quod moriatur.*—The best authorities on the life and works of Dante are: Troya, *Il veltro allegorico* (Florence, 1826); Arrivabene, *Il secolo di Dante* (Udine, 1827); Ugo Foscolo, *Discorso sul testo* (Lugano, 1827, and in London ed. of Dante, 1843, vol. i.); Dante, edited with *Ottimo Comento* (Pisa, 1827–'9); ditto, edited by Ciarditti (5 vols. 8vo, Florence, 1830, and 6 vols. 8vo, Molini, 1830); Rossetti, *Sullo spirito antipapale*, &c. (London, 1832); Colomb de Batines, *Bibliografia dantesca* (Prato, 1845–'6); Balbo, *Vita di Dante* (Florence, 1853); Witte, *Dante's lyrische Gedichte* (Leipsic, 1842); *Dante metrisch übertragen, etc., von Philalethes* [John of Saxony] (2d ed., 3 vols. 4to, Dresden and Leipsic, 1849), containing the best notes and commentary hitherto; Wegele, *Dante's Leben und Werke* (Jena, 1852); Schlosser, *Studien*, &c. (Leipsic and Heidelberg, 1855); Bruce-Whyte, *Histoire des langues romanes* (Paris, 1841, vol. iii.); Aroux, *Dante, hérétique, révolutionnaire et socialiste* (Paris, 1854); Fauriel, *Dante*, &c. (Paris, 1854); Ozanam, *Dante et la philosophie catholique*, &c. (3d ed., Paris, 1855); Villemain, *Cours de littérature française* (Paris, 1855, vol. i.); Quinet, *Les révolutions d'Italie*, &c. (Paris, 1856); Saint-René Taillandier, in *Revue des Deux Mondes* for Dec. 1, 1856; Carlyle, "Heroes in History" (London, 1841); Emerson, "Representative Men" (Boston, 1850); and Mariotti (Gallenga), "Fra Dolcino and his Times" (London, 1853). See also "Dante as Philosopher, Patriot, and Poet," by Vincenzo Botta (New York, 1865), and Symonds's "Introduction to the Study of Dante" (London, 1873). Of the earlier English translations, the most elegant is Cary's, though Dante is a little Miltonized in it. Cayley's preserves the original metre, the difficulty of which makes him sometimes obscure, often rugged; but in parts it is admirable. John A. Carlyle's prose version of the *Inferno* is perhaps as good as any prose rendering of a poem remarkable for rhythm can be. Parsons's excellent version of the whole of the *Inferno* was published in 1867. Longfellow's translation of the entire *Divina Commedia* (1867–'70), in blank verse, is notable for its fidelity to the original; its notes are very valuable. A translation of the *Vita nuova*, by Charles Eliot Norton, was published at Boston in 1867.

DANTON, Georges Jacques, a French revolutionist, born at Arcis-sur-Aube, Oct. 28, 1759, executed in Paris, April 5, 1794. A lawyer by profession, he became one of the most fervent champions of the revolution. He had some intercourse with Mirabeau, and while the latter was exercising his influence over the constituent assembly and the middle classes, he controlled the populace, whose affections he won by his fervid eloquence, energetic bearing, and cordial manners. He was one of the founders of the club of Cordeliers, in conjunction with Camille Desmoulins and Marat, and advocated the most violent measures. After the return of Louis XVI. from Varennes, Danton was one of the most ardent promoters of the petition for his deposition. This petition, presented for signature at a popular mass meeting, resulted, July 17, 1791, in the "massacre of the Champ de Mars." Toward the end of the same year Danton was appointed a member of the administration of the department of the Seine, and assistant attorney of the common council of Paris. He was foremost in organizing and conducting the attack upon the Tuileries, Aug. 10, 1792, and eagerly participated in the fight. A few days afterward he received as a reward from the legislative assembly his appointment to the ministry of justice. At the advance of the Prussian army of invasion in the latter part of August, which filled Paris with consternation, he showed such firmness and confidence that the assembly and the people were reassured; but at the same time he cried, "To stop the progress of the enemy, we must strike the royalists with terror!" On the receipt of the news of the fall of Verdun (Sept. 1) the mob broke into the prisons of Paris, and the dreadful September massacres ensued. Danton himself was unquestionably instrumental in bringing about this bloody work. On being elected to the convention he resigned

his office and became one of the leaders of that body. The death of the king was in his view a political necessity. "We have no right to be his judges, it is true," he said; "well, we will kill him." On his motion a levy of 300,000 men was ordered, and the revolutionary tribunal established, March 10, 1793. On the organization of the committee of public safety, April 6, he was appointed one of its members. Associating himself with Robespierre against the Girondists, he contributed to their fall, but he would willingly have spared their lives. In his opinion, the moment had come when rigor should yield to forbearance. Robespierre, however, did not agree with him, and seized the occasion to rid himself of an ally whom he had always secretly hated. Branded as a *modéré*, Danton was seized at his house, March 31, 1794, and imprisoned at the Luxembourg. Some of the members of the convention desired to save him; but Robespierre, supported by Saint-Just, obtained from the assembly an indirect approval of the arrest; it was decreed that, "in the name of virtue, terror was irrevocably the order of the day." Danton was arraigned with Camille Desmoulins, Lacroix, Fabre d'Églantine, and others of his friends, before the revolutionary tribunal, April 2. Charged with having been the accomplice of all those enemies of the republic whom he had himself destroyed, he was not even allowed to put in a defence. He had himself instituted this tribunal, for doing which he now publicly begged pardon of God and man. "My object," said he, "was to prevent a new September, and not to let loose a scourge upon mankind. These Cains know nothing about government. I leave everything in frightful disorder." The contempt with which he treated his judges hastened his sentence. On hearing it he exclaimed: "We fall victims to contemptible cowards, but they will not long enjoy their victory. Robespierre follows me; I drag him after me." On the road to the place of execution he preserved the most perfect composure, looking disdainfully at the mob that followed him with insults, and telling Camille to take no notice of such a vile rabble. Moved by the recollection of his wife, he shed a few tears, but immediately regaining his self-possession, said: "Be thyself, Danton; no weakness!" To the executioner he said: "Show my head to the crowd; it is worth their seeing." Robespierre witnessed the execution, and departed gleefully rubbing his hands.

DANTZIC (Germ. *Danzig;* Pol. *Gdańsk*), a seaport town of Prussia, capital of a district of the same name in the province of West Prussia, in lat. 54° 21′ 18″ N., lon. 18° 41′ 12″ E., on the left bank of the west or principal arm of the Vistula, about 3 m. from its mouth in the bay of Dantzic, and 250 m. E. N. E. of Berlin; pop. in 1871, 89,121, of whom 76 per cent. were Protestants. It is traversed by the Mottlau and Radaune, two small affluents of the Vistula. The town, which ranks as a fortress of the first class, is nearly circular, and is surrounded by walls and bastions, defended by a citadel and outworks, and provided with the means of flooding a considerable part of the country on three sides. Including its nine suburbs, it has a circumference of more than 12 m. It is divided into five principal parts, the Old, New, and Low towns, the Speicherinsel (Granary island), and the Langgarten. The latter is the more modern part, and is regularly



Dantzic.

and well built. On the Speicher island are immense granaries capable of holding 4,000,000 bushels. No dwelling houses and no lights or fires are allowed on this island. The principal street of Dantzic is the Langgasse, which intersects it from E. to W., and leads into the Langemarkt, or Long Market. It abounds in antique buildings of splendid and fantastic architecture, the most remarkable of which is the Rathhaus, erected in the 14th century. In the older parts of the town the streets are narrow and winding, and the houses poor. The principal buildings are the cathedral or Marienkirche, begun in 1343 and finished in 1503, which contains the celebrated picture of "The Last Judgment," supposed to be the work of Memling, though attributed to Jan van Eyck; the Catharinenkirche, which is still older; the exchange, built in 1379; the town house, arsenal, navigation school, and school of arts. There are also three monasteries, a nunnery,

a number of other churches, several synagogues, foundling and orphan asylums and hospitals for the sick, a lunatic asylum, a theatre, and many institutions of learning and art. The port of Dantzic is Neufahrwasser, at the mouth of the Vistula, which has been built since 1841, when the river changed its course and formed a new outlet, reducing the depth of the main channel. Of late years, however, a canal with 15 ft. of water has been excavated, and large vessels now come up to the town as in former times. In 1869, 1,388 vessels entered with cargoes, and 415 in ballast; total tonnage, 428,888. In the same year 1,753 vessels sailed from the port with cargoes, and 98 in ballast; total tonnage, 446,679. Three steamers and 125 sailing vessels were owned here. The exports by sea in 1869 included 4,057,768 bushels of wheat, 1,323,344 of rye, 697,752 of barley, and 520,000 tons of timber. In 1870 nearly 8,000,000 bushels of grain were exported. The other chief articles of export are liqueurs, beer, wool, flax, hemp, pitch, tallow, leather, potash, salt, saltpetre, starch, and chiccory. The great staple is grain, particularly wheat, which is chiefly Polish, and is noted for the fine quality of the flour made from it. The imports are principally iron, iron nails, coal, coffee, rice, herrings, cotton, guano, lead, and dyewoods. The exports in 1869 amounted to 25,693,310 thalers, the imports to 29,257,910 thalers. The manufactures are chiefly brandy, beer, tobacco, starch, oil, refined sugar, potash, woollen and linen cloths, ship biscuit, and various articles of metal. Amber is also wrought to a considerable extent, supporting a large number of workmen. It is collected on the beach of the Baltic, where it is thrown up by the sea, and large quantities are annually exported to France in the crude state. Dantzic contains 40 beer breweries, 25 distilleries, and 80 establishments where the liqueur known in commerce as Danziges Goldwasser is made. It is connected by railway with Berlin, Stettin, and Königsberg.—There was a considerable town on the site of Dantzic before the end of the 10th century, but its early history is involved in obscurity. It was captured by the Poles in 1294, and in 1310 it fell into the hands of the Teutonic knights, and became a German city among a Polish population. In 1454 it placed itself under the supremacy of the king of Poland, who made it a free city with important privileges. In 1793, on the second partition of Poland, it fell under the dominion of Prussia. It was besieged, bombarded, and taken by the French under Marshal Lefebvre in 1807, and was retaken by the Prussians in 1814, after the famous defence of 12 months made by Gen. Rapp, when the town was half destroyed and the inhabitants were reduced by famine and pestilence to the deepest distress. Dantzic has now partially regained its ancient importance. It is one of the four naval ports of the German empire.

DANUBE (anc. *Danubius*, or, in its lower course, *Ister;* Ger. *Donau*), the largest river of Germany, and, next to the Volga, of Europe. It is formed by the confluence of two streams, the Brege and Brigach, rising in the grand duchy of Baden, on the S. E. slope of the Black Forest, the former, which is considered the principal source of the river, in lat. 48° 6′ N., lon. 8° 9′ E., about 24 m. from the Rhine, at an elevation of about 2,850 ft. above the level of the Black sea. In an air line the distance from the sources to the mouth of the Danube is nearly 1,020 m., while the length of its course is 1,820 m. The river system of the Danube and all its tributaries drains an area of 300,000 sq. m. In its course it traverses nearly 22° of longitude and 5½° of latitude. The elevation of its surface above the level of the sea at Ulm, the head of steam navigation, is about 1,500 ft., at Ratisbon 1,100, at Vienna 500, at Presburg 425, at Buda 350, and at Moldova 200. Three principal divisions of the river basin are indicated by the character of the adjacent country, and the river itself: the upper course, terminating at Passau; the middle, at Kladova; and the lower, at the mouth. In its upper course the Danube, flowing in an easterly direction, skirts the southern base of the sterile table land of the Rough Alps (*Rauhe Alp*), the rapidity of its current being 5½ ft. a second, or about 3½ m. an hour. Its breadth having increased to 250 ft., and its current slackened, it becomes navigable at Ulm. There, sweeping to the N. E. through the fertile Bavarian plain, it forms a curve, of which the northern apex is Ratisbon, and the eastern base Passau. On the N. side the Ludwigs-canal connects it with the Main and Rhine rivers. Near Passau the Bavarian forest on one side, and the northern ranges of the Noric Alps on the other, approach the Danube, narrowing its bed in some places to less than 1,000 ft., while in others it expands to a breadth of 5,000 ft. From Passau to Linz the fall is 2¼ ft. in a mile; from there to Vienna only 1¾ ft. In this portion of its course the scenery of the Danube fairly rivals that of the Rhine, and even excels it in sombre grandeur. Nearer Vienna the mountains recede, and the river enters a large plain, which, being but scantily protected by dikes, is subject to terrible inundations. The measures heretofore adopted for preventing these inundations having been found wholly inadequate, the Austrian government in 1864 appointed a committee, consisting of representatives of the monarchy and of the crownland of Lower Austria and the city of Vienna, to regulate the course of the Danube at and near Vienna. The plan of the committee, which involves the leading of the river into a new channel, was approved in 1868. The cost of the work is estimated at 24,600,000 florins, of which one third is to be paid by the monarchy, one third by Lower Austria, and one third by Vienna. The principal portions of the work are to be completed during 1874.

Passing again between two mountain ranges, the Leitha on the southern and the lesser Carpathians on the northern bank, the Danube emerges into the fertile region of western Hungary. There, spreading out in several branches, it forms a great number of islands, among which the Great Schütt (50 m. long) and the Little Schütt (27 m. long) are the largest. Through a defile, formed by the Nógrád branch of the Carpathians and the Bakony Forest, the Danube enters the great Hungarian plain, turns abruptly S. near Waitzen, and slowly winds through vast level bottom lands and marshes, until it meets the Sirmian range, and, having received the waters of the Drave, is again deflected toward the southeast. It then skirts the plain on the south till near Moldova, where it passes through the Transylvanian granite hills and the Servian limestone range. This pass (Klisura), 80 m. long, offers the greatest obstacles to the navigation of the Danube. Narrowed down to less than one half its former breadth, the river forms in seven places between Alibeg and Kladova rapids and whirlpools, of which those in the so-called Iron Gate, below Old Orsova, are the most violent. There it pours through a defile 7,500 ft. long and 650 wide, with a fall of 16 ft., and a rapidity of 10 to 15 ft. a second, over a number of reefs and ledges. After having been a terror to navigators for centuries, the Iron Gate has at last been rendered navigable for steamers, a channel having been cut through the ledge, by which vessels ply from Vienna to Galatz without a portage. In ancient times this portion of the river course was avoided by a canal, of which some vestiges still remain. Near Kladova the Danube enters the Bulgaro-Wallachian plains. From Tchernetz to below Widin it runs nearly S., then turns E. Slowly rolling its muddy waters round the



The Iron Gate of the Danube.

extreme spurs of the Balkan, and forming numerous islands, it reaches a point only 32 m. from the sea, where it suddenly bends N. and flows upward of 100 m. to the junction with the Sereth; thence again eastward; at last, joined by the Pruth and divided into several branches, which sluggishly wind through a low and dreary alluvial country (the delta of the Danube), it empties into the Black sea by three principal channels, the Kilia, Sulina, and St. George, and four lesser ones.—The most important tributaries of the Danube are, on the right or southern bank, the Iller, Lech, Isar, Inn, Traun, Enns, Leitha, Raab, Sárviz, Drave, Save, and Morava; on the left bank, the Brenz, Warnitz, Altmühl, Naab, Regen, Itz, March, Waag, Neutra, Gran, Eipel, Theiss, Temes, Aluta, Arjish, Yalomitza, Sereth, and Pruth. The principal towns on its banks are: in Würtemberg, Ulm; in Bavaria, Ratisbon and Passau; in Austria proper, Linz and Vienna; in Hungary, Presburg, Comorn, Gran, Buda, and Pesth; in the Military Frontier, Peterwardein and Orsova; in Servia, Belgrade; in Bulgaria, Widin, Nicopolis, Rustchuk, Silistria, and Hirsova; in Roumania, Giurgevo, Braila, and Galatz.—The Danube has through all history been of great political importance. For the Huns, the Avars, Bulgarians, Magyars, and Tartars, the Danube valley was the scene of efforts to subdue the Occident. While the progress of the barbarians was somewhat checked by the other great European rivers flowing N. and S., the Danube served as a highway to the west. The western nations having at last established their supremacy, the human current was reversed for the conquest of the Orient by the crusaders; and during suc-

ceeding centuries the countries bordering on the Danube were frequently the theatre of conflict between the Christians and the Turks. The Germans occupy the entire upper basin, and portions of the middle and lower; the Slavs parts of both banks of the middle course of the river; the Magyars the central portion of the valley, and the Roumanians the lower regions.—The commercial use of the Danube has scarcely begun to be developed. The rapidity of the current in its upper course, the reefs, rapids, whirlpools, and sudden changes of the channel and banks, its shallowness where it passes through the Hungarian plains, and its numerous windings, offered so many impediments to navigation, that up to a comparatively recent period it was limited to the scantiest intercourse between the provinces immediately adjoining the river. The application of steam in 1830 inaugurated a new era in the history of the Danube. Then the governments, becoming aware of the importance of the river, adopted a system of improvements. Reefs were removed, flats deepened by narrowing the channel, and canals and cut-offs constructed. By the treaty of Paris (1856) the entire freedom of the navigation from tolls and dues was stipulated for; and in pursuance of this, the governments of the states through which the river flows agreed upon a convention (Nov. 7, 1857), by which vessels of all nations were allowed to ascend the Danube from its mouth to any point above, while the navigation between different points on the river was reserved to the subjects of the riparian states. The provisions of the treaty of Paris were partially modified by the treaty of March 13, 1871, which authorizes the riparian states, in case of their agreement as to the removal of the remaining obstructions at the Iron Gate, to levy a provisional tax on all commercial vessels availing themselves of its advantages, until the expenditure shall have been repaid. The principal drawback to the importance of the Danube as a channel of commerce is the shallowness of its mouths. The three outlets enclosing the delta (or rather the flat islands Tchetal, Leti, and Moïshe, the highest elevation of which is not more than 6 or 7 ft. above the level of the sea), the Kilia Boghasi, Sulina Boghasi, and Kediskeh Boghasi (St. George channel), have a length of 72, 53, and 55 m. respectively, and according to the report of E. Dejardins, submitted to the prince of Roumania in 1867, convey the waters of the Danube in the respective proportions of $\frac{17}{27}$, $\frac{3}{27}$, and $\frac{8}{27}$ of the volume of the river. Formerly the St. George channel was used almost exclusively; but having been choked with sand by the simultaneous occurrence of a strong freshet in the river and a violent gale from the sea, it was abandoned, and the Sulina channel resorted to. The Turkish government took good care to keep this channel open; but when, by the treaties of 1812 and 1829, the mouths of the Danube passed under the control of Russia, all efforts in that direction were abandoned, with the intention, it was said, of diverting the Danubian trade into the Kilia branch for the advantage of the harbor of Ismail. The bar of the Sulina continues 1,000 yards outside of the mouth; it has a width of 2 to 3 m., and a depth of water varying from 10 to 14 ft. The energetic efforts of the Austrian government immediately after the retreat of the Russians (1854) at last succeeded so far as to obtain an available average depth of 10 ft., while under Russian rule the depth had been reduced to $7\frac{1}{2}$ ft. By the treaty of Paris an international committee was appointed for the regulation of the mouths of the Danube. The majority of this committee concluded that it would be feasible to suppress or cut off two of the principal outlets, and, by leading their waters into the third, increase the volume and power of the current sufficiently to sweep away the mud and sand banks. A special committee, appointed by Austria, reported in 1857 that the St. George channel, if restored to its former condition, would in all respects offer the shortest and safest outlet, and that the cost of this improvement would not exceed 3,700,000 florins, nor the cost of keeping it in repair 65,000 florins per annum. The Danube and its principal tributaries (the Inn, Drave, Theiss, and Save) are navigated by steam vessels for an aggregate length of 2,400 m. The Bavarian Danube steam navigation company was established in 1838, and in 1862 was merged in the Austrian company, which was organized in 1830. In 1870 the latter company employed 155 steamers and 547 transports. The voyage from Vienna to Constantinople is now performed in seven days.

DANVERS, a town of Essex co., Mass., 15 m. N. N. E. of Boston; pop. in 1870, 5,600. It contains a carpet factory, a rolling mill, six tanneries, six brick yards, manufactories of boots and shoes, a national bank, and two weekly newspapers. It is connected by rail with Boston and Newburyport. In 1852 George Peabody, a native of this town, gave $20,000 (afterward increased to $200,000) "for the promotion of knowledge and morality" among the inhabitants. With this donation the Peabody institute was founded, and enriched with a library. He also gave $50,000 to establish a branch in that part of the town known as North Danvers. Until 1756 Danvers formed a part of Salem. In 1855 it was divided by the incorporation of South Danvers, now Peabody, as a separate town.

DANVILLE. I. A borough and the capital of Montour co., Pennsylvania, on the N. branch of the Susquehanna river, 12 m. above Sunbury, and 50 m. N. E. of Harrisburg; pop. in 1870, 8,436. Montour's ridge, extending nearly 21 m. along the river, abounds in excellent iron ore, and in limestone, which is used as a flux in smelting. Rich mines of anthracite coal have also been opened in the vicinity, and the northern branch of the Pennsylvania canal affords means of transportation. The Cata-

wissa and the Lackawanna and Bloomsburg railroads also pass through Danville. It is chiefly noted for its iron manufactures, containing eight blast furnaces, with an aggregate capacity of 50,000 tons of pig iron per year, and five rolling mills, employed in the manufacture of railroad iron, which produce about 70,000 tons of finished rails annually. A muck bar mill, worked on the coöperative plan, is in successful operation. There are also two large steam planing mills, several flour mills, &c. The town has 15 graded public schools, a semi-weekly and two weekly newspapers, and 23 churches of different denominations. **II.** A town of Pittsylvania co., Virginia, on the Dan river, about 120 m. W. S. W. of Richmond; pop. in 1870, 3,463, of whom 2,065 were colored. It is pleasantly situated on high ground, near the head of navigation, and has an active trade. The surrounding country is fertile, and abounds in coal, iron, and limestone. The canal built around the falls at this place furnishes good water power. There are several churches, academies, and banks, iron founderies and mills, and two weekly newspapers. The Richmond, Danville, and Piedmont railroad passes through the town. After the abandonment of Richmond, April 2, 1865, Danville became for a few days the confederate capital, and here on April 5 Jefferson Davis issued his last proclamation. **III.** A town and the capital of Boyle co., Kentucky, on a small branch of Dick's river, 42 m. S. of Frankfort; pop. in 1870, 2,542, of whom 1,210 were colored. It is noted as the seat of Centre college (Presbyterian), founded in 1819, which in 1872 had 12 professors and instructors, 150 students, and a library of 5,000 volumes; and of the state deaf and dumb asylum, containing 97 inmates. The Danville theological seminary (Presbyterian), founded in 1853, has two endowed professorships, 200 alumni, a library of 7,000 volumes, and an endowment of $177,391. A branch of the Louisville and Nashville railroad passes through the town. **IV.** A city and the capital of Vermilion co., Illinois, on the Vermilion river, 16 m. N. W. of its confluence with the Wabash, 125 m. S. of Chicago, and 4 m. W. of the Indiana state line; pop. in 1870, 4,751; in 1873, about 7,000. It was settled in 1828, and its rapid growth and importance are due to its situation on the N. E. outcrop of the central (bituminous) coal field (see COAL, vol. iv., p. 739), the mining of which is its chief source of wealth. It is also an important railroad centre, connecting with Chicago by the Chicago, Danville, and Vincennes railroad; with Toledo, St. Louis, Quincy, and Hannibal, Mo., by the Toledo, Wabash, and Western; with Terre Haute and Evansville, Ind., by the Evansville, Terre Haute, and Chicago; with Indianapolis, Peoria, Rock Island, and St. Paul, by the Indianapolis, Bloomington, and Western; and with Vincennes and Cairo, by the Paris, Danville, and Vincennes. There are 12 churches, a high school, 6 ward schools, 4 flouring mills, 2 founderies, 5 carriage and wagon manufactories, 2 planing mills, car and locomotive works, and other industries. Danville is surrounded by a rich and densely settled agricultural region, with an abundance of timber, building stone, and water.

DAPHNE, a wood nymph or water nymph of Grecian mythology. It seems doubtful whether there were not three distinct characters of the name in Greek legend. The best known and received version of her story relates that Apollo became enamored of her, and pursued her when she fled from him. As she was about to be overtaken, she besought her mother Ge (Terra) to help her. The earth opened and received her, and as a compensation to Apollo for her loss created the laurel, which was always afterward sacred to him. According to Ovid, Daphne herself was transformed into a laurel tree. Another legend is that Leucippus, a prince of Pisa in Elis, introduced himself disguised as a young girl into the nymph's society; but Apollo caused his discovery, and Daphne and her companions put him to death.

DAPHNE, the ancient name of a place near Antioch in Syria, containing a large and beautiful grove of laurels and cypresses, and a magnificent temple of Apollo, which was built by Antiochus Epiphanes. The most licentious scenes were enacted here, and the Roman general Cassius would not allow his soldiers to visit the place. When the emperor Julian came to Antioch the temple was almost deserted, and before he left the city it was consumed by fire, set probably by some Christian incendiary. It was never rebuilt.

DAPHNE, a genus of ornamental plants, natives of the more temperate parts of Europe and Asia. Some are cultivated for beauty and fragrance, as the *D. odora;* others for their vivid green foliage, as the *D. laureola* of Britain; and others are useful in the arts. *D. mezereum*, a deciduous plant with white or purple



Daphne mezereum.

fragrant flowers closely attached to the shoots, is the earliest blooming shrub of our gardens, the blossoms appearing in the beginning of April, before the leaves expand. This species has a bad reputation, the berries being used in Sweden to poison wild animals, and a very few of them being fatal to man. The juice is acrid, and produces inflammation and even blisters upon the skin. The inner bark of *D. lagetta*, the lace tree of Jamaica, if macerated in water, is easily separated into thin layers, and has the appearance of lace.

DAPHNEPHORIA (Gr. *δάφνη*, laurel, and *φέρειν*, to bear), a Grecian festival celebrated every ninth year at Thebes, in honor of Apollo. A youth was chosen from one of the noble families of the city to be the daphnephorus or bearer of the laurel bough, and the priest of Apollo for that year. Behind him came a troop of maidens bearing boughs and singing hymns. The Delphians also had a custom of sending a boy every ninth year to pluck laurel boughs in the vale of Tempe, in commemoration of the purification of Apollo in that place after he had slain the Python.

DA PONTE. I. Lorenzo, an Italian poet, born at Ceneda, near Venice, March 10, 1749, died in New York, Aug. 17, 1838. After being for two years professor of rhetoric in the seminary of Porto Guaro, he removed to Venice, whence he was exiled for writing a satirical sonnet against Count Pisani, his competitor for an elective office. His next abode was in Vienna, where he became Latin secretary to the emperor Joseph II. He now commenced writing for the Italian theatres of Vienna and Prague, and produced the librettos of a number of operas for Salieri, Martini, and Mozart, among which were *Don Giovanni* and *Le nozze di Figaro*. After the death of Joseph he went to London, and became poet and secretary of the Italian opera. In 1805 he removed to New York, and there taught Italian privately till 1828, when he was appointed professor of Italian in Columbia college. Besides various dramas, he is the author of memoirs of his own life, of a number of sonnets, and of translations into Italian of Byron's "Prophecy of Dante" and Dodsley's "Economy of Human Life," published in New York. **II. Lorenzo L.,** son of the preceding, professor of belles-lettres in the university of New York, born in London in 1805, died in New York in 1841. He is the author of a "History of the Florentine Republic" (2 vols. 8vo, New York, 1833).

DAPPES (*Vallée des Dappes*), a valley about 4 m. long and 2 m. broad in the Swiss canton of Vaud, on the W. slope of the Jura mountains, 4,000 ft. above the level of the sea. A small stream from which the valley takes its name meanders through it. It is inhabited by 100 or 150 herdsmen. Without value as a territorial possession, this valley has obtained some importance as the most available military route from France to Savoy. In 1802 France annexed it, but Switzerland recovered possession in 1814 and maintained it, although the treaty of Vienna did not stipulate for its relinquishment by France. On several occasions France endeavored to regain the valley, but was stoutly resisted by the Swiss confederation. In 1861 the arrest of a Frenchman by order of the Swiss authorities threatened to bring on a conflict between France and Switzerland; but in December, 1862, an agreement was concluded by which Switzerland ceded to France that part of the valley which contains the road to the Col de la Faucille, and received from France a district of equal size.

DARABGERD, or **Darab,** a city of Persia, capital of a district of the same name in the province of Farsistan, lat. 29° N., lon. 54° 20′ E., 110 m. S. E. of Shiraz; pop. about 15,000. It has manufactories of cloth, pottery, and carpets, and refineries of rock salt from the neighboring mountains. It was formerly a town of some extent, and there are many remains of antiquity, including the ruins of an aqueduct, some sculptured rocks, and a caravansary hollowed in the heart of a mountain. The town is surrounded with date, orange, and lemon groves, and is situated at the foot of Mount Darakub, celebrated for producing *mumia nativa*, a liquid petroleum, believed by the Persians to possess miraculous healing power.

D'ARBLAY, Madame. See ARBLAY, MADAME D'.

DARBOY, Georges, a French prelate, born at Fayl-Billot, Haute-Marne, in 1813, shot in Paris, May 24, 1871. After completing his college course in the seminary of Langres, he was ordained priest in 1836, and placed as assistant in the parish of St. Dizier. In 1839 he was appointed professor of mental philosophy in the diocesan seminary, and in 1841 of dogmatic theology. In 1845 he went to Paris, where his reputation caused him to be welcomed by Archbishop Affre. He was appointed a chaplain of the collége Henri IV., and subsequently named honorary canon of the metropolitan chapter. Archbishop Sibour gave him the direction of the *Moniteur Catholique*, made him first chaplain of the collége Henri IV., and soon after honorary vicar general and superintendent of religious instruction in all the government schools of the archdiocese. In 1854 he accompanied the archbishop to Rome, where the pope bestowed upon him the rank of prothonotary apostolic. On his return to Paris he became titular vicar general, and in 1859 bishop of Nancy. In June, 1848, he had stood by the deathbed of his first protector in Paris, Archbishop Affre, shot down on the barricades; on Jan. 3, 1857, he had seen Archbishop Sibour assassinated in the midst of a solemn religious ceremony; and on Jan. 10, 1863, the emperor appointed him archbishop of Paris. Among the changes which he wished to introduce, one was to do away with the jurisdictional privileges of the Jesuits, Carmelites, and other religious societies in his diocese, whose status he deemed not strictly canonical. This brought him into collision

with the court of Rome. A protracted correspondence ensued; but the difficulty was settled, and the archbishop attended the council of the Vatican. Before setting out he published a letter on the relations between church and state, which he concluded by urging the observance of the concordat agreed upon between Napoleon I. and Pius VII. He was firm in opposing everything in the proposed measures which he thought hostile either to the rights of bishops in their own administration, or to the natural rights of civil society within its own lawful sphere. Having suffered from the attacks of certain French journalists, he demanded from the council a canonical remedy against such abuses. He voted to the last against the opportuneness of the decree on infallibility, and abstained from voting in the session in which it was proclaimed, but was one of the first to give in his adhesion to the supreme decision of the church before he left Rome. At the commencement of the war with Prussia he was active in organizing relief corps for the sick and wounded, and was unsparing in labors and alms while the siege of Paris lasted; and when the commune was proclaimed he refused to forsake his flock. On April 5, 1871, he was seized as one of the hostages for the communist prisoners in the hands of the Versailles government, and confined in the prison of Mazas. Transferred to the prison of La Roquette on the first decided success of the Versailles troops, the open wagons in which he and his companions rode were followed by an infuriated multitude shouting "Death! death!" On the morning of May 24 the corridor in which the prisoners had been confined for two days was suddenly invaded by a detachment of communists. Six names were called out, among them that of the archbishop. The victims passed between a double rank of armed men into a narrow alley, where they were ordered to stand up against a wall, at some paces from the firing platoon. Words of pity and forgiveness fell from the archbishop's lips on his executioners.

DARBY, John Nelson. See supplement.

DARBYITES. See Plymouth Brethren.

DARCET, Jean, a French chemist, born at Donazit about 1727, died in Paris, Feb. 13, 1801. Although his parents had destined him for the bar, he studied chemistry, spent a fortune in the pursuit of his favorite science, and suffered for a time the privations of poverty. Having accepted the tutorship of the sons of Montesquieu, he became his intimate friend and an associate in all his labors, assisting him in preparing the *Esprit des lois*, and defended him in his last moments against the attacks of the Jesuits. After the death of Montesquieu he devoted himself exclusively to chemistry in company with Count de Laugarais. His experiments on the materials of porcelain and the modes of treating them form an epoch in the progress of the art, as practised at Sèvres. In 1770 he made his first communication to the academy of sciences, in which he explained his investigations into the chemical nature of precious stones, demonstrating the combustibility of the diamond. He discovered the method of extracting soda from marine salt, and the means of manufacturing soap with any kind of grease or oil, of calcining calcareous earth, of improving various processes of dyeing, and of assaying metals more accurately. He discovered what is called the "fusible alloy" of tin and bismuth. He also wrote a paper on the means of extracting nutritive substances from bones. In 1774 he was appointed professor of chemistry at the collége de France, and in 1784 became a member of the academy of sciences and director of the manufactory at Sèvres. He was general inspector of the assay office of the mint at Paris, and of the Gobelins manufacture of tapestry. On the outbreak of the revolution he espoused its cause.

DARDANELLES, four castles or forts situated on the opposite shores of the Hellespont, or strait of the Dardanelles, which joins the archipelago (the Ægean sea of the ancients) to the sea of Marmora (Propontis), and extends in a S. W. direction about 45 m., between lat. 40° and 40° 30′ N., and lon. 26° 10′ and 26° 45′ E. The name is probably from the ancient city of Dardanus, on the E. shore. The Dardanelles are intended to command the access to Constantinople, but in several instances ships of war have passed them without serious injury. Thus in 1770 a Russian squadron under Admiral Elphinstone, in 1801 Commodore Bainbridge in the American frigate George Washington, and in 1807 the British admiral Duckworth, sailed through the strait. The two castles at the entrance from the archipelago, Kum Kale or Hissar Sultani on the Asiatic and Sed-il-Bahr on the European shore, were built by Mohammed IV. in 1659, to secure his fleet against the Venetians, who used to attack it in sight of the old castles; they are in good repair, but inefficient in consequence of the width of the channel ($4\frac{3}{4}$ m.). The two old castles, Tchanak Kalesi or Kale Sultanieh in Asia, and Kilid Bahr in Europe, command the strait at a point where it is only 800 yards across, and may be closed by chains. The principal defences on the European side are two excellent coast batteries, Namasyah and Degermen Burun. All the forts are defended by guns of the largest calibre and of the most modern construction; the bastions are open at the gorge, the batteries without casemates, and both are commanded by hills in the rear. The barrow of Hecuba or Cynossema, where the Athenians erected a trophy after their victory in the Peloponnesian war (411 B. C.), is close to the old European castle. The town of Tchanak Kalesi is an indifferent place, containing about 2,000 houses. N. and E. from it a low strip of land called Nagara Burun projects into the sea. This spot has been fixed upon as the site of the ancient Abydos, and a similar projecting point corresponds to it on the

European shore. Here Xerxes is supposed to have built his bridge uniting the two continents; here Alexander the Great crossed into Asia; and here the crescent was for the second time planted on European soil by Solyman (1357). Here also Leander swam across the strait from Abydos to Sestos, to visit Hero, and Lord Byron and Lieut. Eckenhead swam the same distance in 70 minutes (March 3, 1810). The Turkish government has always maintained that no foreign vessel of war should be allowed at any time to pass the Dardanelles, which principle England recognized in 1809; and hence in the Egyptian war of 1832–'3 the British and French fleets were not permitted to enter the strait, though a Russian fleet from the Black sea was anchored in the Bosporus. In 1841 the five great powers of Europe fully recognized this principle, and it was reaffirmed by the treaty of Paris in 1856. But in November, 1858, the United States frigate Wabash passed the Dardanelles and anchored at Constantinople, the commanding officer maintaining that the United States, being no party to the treaty of Paris, were not bound by its stipulations. Without acknowledging explicitly the correctness of this position, the Turkish government received the Wabash in a friendly spirit. In 1870 this clause of the treaty of Paris was abrogated, and there is no longer any restriction on the navigation of the strait.—The so-called LESSER DARDANELLES are two large castles situated on Capes Rhion and Antirrhion, at the entrance to the gulf of Lepanto or of Corinth.



The Dardanelles.

DARDANIA. **I.** A district in the S. W. part of ancient Mœsia, now included in Servia and Prisrend. It was inhabited by a fierce and barbarous race, almost continually at war with Macedonia. It was made a Roman province by C. Scribonius Curio, who was awarded a triumph in 71 B. C. for his conquest. In the reign of Constantine it became a part of the prefecture of eastern Illyricum. Its chief city, Scupi, is the modern Uskup. **II.** A district of ancient Mysia, along the Hellespont, and, according to Strabo, N. of Troas; but its position cannot be accurately defined. Dardanus, the city from which it derived its name, was situated on a promontory called Dardanium by Pliny and Dardanis by Strabo, about 70 stadia from Abydos. A more ancient town of Dardanus, according to the Iliad, was situated at the foot of Mount Ida.

DARDANUS, according to ancient legends, the ancestor of the Trojans. The Greek tradition was that he was a king in Arcadia, and that he went from that country to Samothrace, whence he passed over into Asia Minor, and founded the town called after him. The Italian legend said that Dardanus was a native of Etruria, and thence went to Samothrace.

DARDEN, Miles, probably the largest man on record, born in North Carolina in 1798, died in Henderson co., Tenn., Jan. 23, 1857. He was 7 ft. 6 in. high, and in 1845 weighed 871 lbs. At his death his weight was a little over 1,000 lbs. Until 1853 he was active and lively, and able to labor, but from that time was obliged to stay at home, or be hauled about in a two-horse wagon. In 1839 his coat was buttoned around three men, each weighing more than 200 lbs., who walked together in it across the square at Lexington. His coffin was 8 ft. long, 35 in. deep, 32 in. across the breast, 18 across the head, and 14 across the feet.

DARE, a N. E. county of North Carolina, recently formed from portions of Currituck, Hyde, and Tyrrell counties, bounded N. by Albermarle sound, W. by Alligator river, and including several low sandy islands along the Atlantic coast; area, about 350 sq. m.; pop. in 1870, 2,778, of whom 377 were colored. The main portion is swampy, and forests of cypress, red cedar, and pine abound. Capital, Manteo, on Roanoke island.

DARE, Virginia, the first child of English parents in the new world, born at Roanoke in August, 1587, and named after the district of Virginia. She was the granddaughter of John

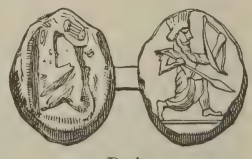
White, governor of the colony sent by Sir Walter Raleigh to found an agricultural state, which sailed from Plymouth April 26, 1587, and reached Virginia in July of the same year. White's daughter was married to Mr. Dare, one of his assistants.

DARESTE DE LA CHAVANNE, Antoine Élisabeth Cléophas, a French author, born in Paris, Oct. 25, 1820. He early taught history in various places, and since 1851 has been professor, and latterly dean of the faculty of Lyons. His principal works are: *Histoire de l'administration en France depuis Philippe Auguste* (2 vols., 1848); *Histoire des classes agricoles en France depuis Saint Louis jusqu'à Louis XVI.* (1853); and *Histoire de France depuis ses origines jusqu'à nos jours* (8 vols., 1865–'73).

DARFOOR, a country of central Africa, forming a large oasis in the S. E. corner of the great desert, bounded W. by Waday, S. by Roonga and Fertit, and E. by a narrow strip of country inhabited by wandering Arabs, which separates it from Kordofan. It lies between lat. 10° and 16° N., and lon. 22° and 28° E.; area about 140,000 sq. m.; pop. estimated by Browne at the close of the last century at 200,000, by Mohammed ibn Omar el-Tounsy at 3,000,000 or 4,000,000, and by Behm in 1872 at 5,000,000. The S. part is hilly, and embraces many well watered valleys; the N. consists chiefly of arid plains. The products of the soil are millet, rice, maize, sesamum, legumes, tobacco, medicinal plants, dyestuffs, and fruit. Cattle form the principal wealth of the people; camels, small elephants, and goats are numerous, and their flesh is used as food; horses and sheep are few and poor. The wild animals embrace the lion, leopard, hyæna, wolf, jackal, rhinoceros, elephant, giraffe, hippopotamus, crocodile, and buffalo. Vultures, Guinea fowl, turtle doves, and chameleons are abundant. Among the mineral products are iron, copper, alabaster, marble, and nitre. The climate is excessively hot, and during the dry season the country is almost stripped of vegetation. The periodical rains last from the middle of June to the middle of September. The inhabitants are Arabs and negroes, professing the Mohammedan religion, but paying little regard to its stricter precepts; in morals and manners they are very degraded. They practise polygamy, and every species of labor except bearing arms is exacted of the women. The sovereign is a despotic sultan, whose court is encumbered with an absurdity of ceremonial seldom paralleled. He never speaks but through the mouth of an interpreter; when he spits, the spittle is gathered by the hands of his attendants; if his horse stumbles while riding, or he loses his seat, every one of his retinue must do the same; and when the sultan sneezes everybody present must sneeze likewise. The royal body guard is composed of old women. Darfoor carries on some trade with Upper Egypt in slaves, ivory, horn, ostrich feathers, gum, hides, drugs, copper, pimento, tamarinds, leathern sacks for water, parroquets, Guinea hens, and monkeys; in exchange for which it receives cotton cloths, glass ware, various trinkets and ornaments, coffee, spices, sugar, Indian merchandise, nails, metals, fruit, grain, firearms, other weapons, shoes, &c. The chief commercial town is Kobbeh, the former residence of the sultan, from which a caravan goes to Cairo. The new residence is Tendelty.

DARGAUD, Jean Marie, a French author, born Feb. 22, 1800. He studied law in Paris, but devoted himself to literature, and has published *Histoire de Marie Stuart* (2 vols., 1850), *Histoire de la liberté religieuse en France et de ses fondateurs* (4 vols., 1859), *Histoire de Jane Grey* (1862), *Histoire d'Élisabeth d'Angleterre* (1865), and other works.

DARIC (Gr. δαρεικός), an ancient Persian coin of pure gold, specimens of which are still preserved in several European collections, bearing on one side the image of a kneeling archer, on the other that of a royal palla. It was known to the Greeks, Romans, and Jews; and the last named used it after the Babylonish captivity, under the reign of the Persians, calling it *adarkon* or *darkemon* (mentioned in Chronicles, Ezra, and Nehemiah). Its value was equal to 20 silver drachmæ, or 16*s.* 3*d.*; 3,000 being equal (according to Xenophon) to 10 talents. Its name is variously derived from that of King Darius Hystaspis, who regulated the Persian currency, and from several Persian words meaning king, palace, and bow. The so-called silver darics were not designated by this name in antiquity.



Daric.

DARIEN, Colony of, founded on the isthmus of Panama, near the close of the 17th century, by William Paterson, a Scotchman, and the founder of the bank of England. (See Paterson, William.) In June, 1695, a charter was granted by the Scottish parliament and ratified by the king. In a short time the subscription for stock amounted to £400,000 in Scotland, while £300,000 was taken by the English and £200,000 by the Dutch. The English and Dutch subscriptions were almost wholly withdrawn in consequence of the severe measures against the enterprise which were passed by the English parliament at the instance of trading corporations. The Scotch, however, favored the enterprise with increased zeal, and on July 26, 1698, 1,200 men, in five ships, sailed from Leith for Panama, where they arrived after three months. They founded a colony at Acta, now Port Escoces, about 30 m. N. W. of the gulf of Darien, giving it the name of New St. Andrew, and calling the country New Caledonia. They purchased lands of the natives, sent messages of amity to the nearest Spanish governors, and published a declaration of freedom of trade and religion to all people. They had brought with them only a short sup-

ply of provisions, trusting to obtain what they needed from the English colonies; but the Dutch and English East India companies had united in procuring orders from the king forbidding any one to render them any assistance. Thus abandoned to the resources of the country and the effects of the climate, their numbers were rapidly reduced by disease. Paterson lingered eight months, waiting for assistance from Scotland, and not till almost all had died or departed did he abandon the settlement, which he was the last to leave. Meantime, 1,300 men under Capt. Campbell had left Scotland, but did not arrive till after the departure of the colonists. Upon their arrival they were threatened by a Spanish force of 1,500 men and 11 ships. On the second day after landing, Capt. Campbell with 200 men attacked and dispersed the Spanish camp; but on his return to the fort he found it blockaded by the Spanish squadron, and all hope of retreat or aid dispelled. After a siege of nearly six weeks the colonists capitulated, except Campbell, who escaped, reached New York, and sailed for Scotland. Not more than 30 of the colonists returned to their native country; among these was Paterson, who afterward made an unsuccessful attempt to renew the enterprise. The story of the colony is told in Eliot Warburton's novel, "Darien."

DARIEN, Gulf of, a portion of the Caribbean sea, on the N. coast of Colombia, bounded W. by the isthmus of Darien or Panama. It is about 70 m. long from N. to S. and 25 m. from E. to W. Its shores are steep, generally inaccessible from shoals, and in some parts the anchorage is unsafe. It terminates at the south in the bay of Choco, which receives the river Atrato.

DARIEN, Isthmus of. See PANAMA.

DARIUS (Gr. Δαρεῖος; Heb. *Daryavesh*; Pers. *Dariyavus*, in several inscriptions), the name of several kings of Media and Persia. **I. Darius the Mede,** represented in the book of Daniel as the successor of Belshazzar. According to the theory of Markus von Niebuhr, the personal name of Astyages, the grandfather of Cyrus, was Darius, Astyages being a national and not a personal name, and that king the Darius the Mede of the book of Daniel. Another hypothesis is that he was identical with the Cyaxares II. mentioned by Xenophon in the Cyropædia as the son of Astyages and maternal uncle of Cyrus, who married his daughter. Being an indolent, luxurious man, Cyaxares, according to Xenophon, left the real exercise of power entirely in the hands of Cyrus, who succeeded him; and his name may for this reason have been passed over by other historians, who represent Cyrus as the immediate successor of Astyages. Josephus seems to have adopted this view, since he says that Babylon was taken by Darius and Cyrus his kinsman, and that Darius was the son of Astyages and was known among the Greeks by another name, which he does not mention. Still another theory is that Darius the Mede was a member of the royal Median family, and was merely viceroy at Babylon for two years, until Cyrus came to reign there in person. This appears to be corroborated by the expression in Daniel, "Darius the son of Ahasuerus, of the seed of the Medes, who was made king over the realm of the Chaldeans." In the words of Rawlinson, "Upon the whole, it must be acknowledged that there are scarcely sufficient grounds for determining whether the Darius Medus of Daniel is identical with any monarch known to us in profane history, or is a personage of whose existence there remains no other record." **II. Darius Hystaspis,** son of Hystaspes (Pers. *Vistaspa* or *Ustaaspi*), of the royal race of the Achæmenidæ, reigned 521–486 B. C. According to Herodotus, he was marked out for the empire during the life of Cyrus, who saw him in a dream with wings overshadowing Asia and Europe. Cambyses dying without issue, and no other son of Cyrus surviving, Darius was the hereditary successor to the throne. He conspired with Otanes and five other nobles to dethrone the psuedo-Smerdis (the Gomates of the Behistun inscription), whom the magi had made king of Persia during the absence of Cambyses. After the death of the usurper, Otanes wished to establish a democracy, but the others voted to set up a monarchy, and agreed that the seven should ride out at sunrise the next day, and that he whose horse first neighed should be declared king. Darius, according to Herodotus, secured the prize by a trick, in collusion with his groom, who stationed a mare well known to his master's horse in the suburbs through which they were to ride. To strengthen himself on the throne, he married a daughter of Otanes, a daughter of Smerdis, and two daughters of Cyrus, one of whom, Atossa, attained great influence at his court. He was a monarch of great abilities, enterprising, despotic, and cruel, and may be regarded as the organizer of the Persian empire. He was a zealous adherent of the ancient Aryan or dualistic religion of his nation, and restored its supremacy over the rival creed of Magism. He divided Persia into 20 satrapies, determined the amount of their contributions in produce or precious metals, and established stated communication by means of couriers between the 127 provinces of the empire. The siege of Babylon, which revolted and defended its independence with the most desperate determination, lasted, according to Herodotus, 20 months. The city was conquered only by the self-sacrifice of Zopyrus, who, having horribly mutilated his face, went over into the besieged city, complained of the king's cruelty, became commander of the defending army, and betrayed it to Darius. The monarch wreaked his vengeance by impaling 3,000 of the chief citizens, and destroying the walls of the city (517). This narrative of the Greek historian, however, is not supported by the inscription

of the monarch himself (see BEHISTUN), according to which Babylon twice revolted from him. To chastise the Scythians around the northern shores of the Black sea for ancient incursions into Asia, he started with 700,000 men from Susa, his capital, passed the Bosporus on a bridge built by a Samian Greek, traversed Thrace, and crossed the Danube, following the nomads, who had only to retreat, driving their herds before them and filling up the wells in their route, in order to conquer the invaders, without a battle, by famine and the hardships of the march. The greater part of his army was lost when he returned, leaving the sick and aged behind, and a body of troops under Megabazus in Thrace, which conquered the Pæones and transplanted them to Phrygia. Another expedition conquered a part of India, and the explorations down the Indus, and around the shores of the Erythræan sea, under Scylax, a Carian Greek, even gained maritime glory for the monarch. The revolt of the Ionians, the support given them by the Athenians and Eretrians, and particularly the burning of Sardis (500), incited Darius to an expedition against Greece. After the conquest of Miletus, an army under Mardonius and a fleet were sent to subdue the Greeks; but the attacks of the Scythian tribes in Thrace, and tempests off Mount Athos, compelled both to return, and the Athenians rejected with scorn the demand for earth and water made by the heralds of the great king. Another army, sent with 600 vessels under the command of Datis and Artaphernes, conquered Naxos, but spared the sacred island of Delos (while the other Cyclades submitted without a struggle), destroyed the betrayed Eretria on the island of Eubœa, and landed in Attica. But the victory of the Athenians under Miltiades at Marathon (490) defeated the army of Darius, though not his hope of subduing Greece. Arming the whole force of his empire, he was checked by a revolt in Egypt, soon after which he died, leaving the accomplishment of his revenge to his son Xerxes. Like Cyrus, Darius favored the Jews, and it was during his reign that they rebuilt the temple of Jerusalem. **III. Darius Ochus** (the latter being his name before his accession), surnamed by the Greeks Nothus (the bastard), reigned 424–405 B. C. He became king by putting to death his natural brother Sogdianus, who had killed Xerxes II., the only legitimate son of Artaxerxes I. He was a weak prince, ruled by his favorites, and especially by his queen Parysatis, a cunning and ambitious woman. His reign was disturbed by rebellions, among which that of Amyrtæus in Egypt was particularly successful. His governors in Asia Minor, Tissaphernes and Cyrus (the younger), his son, extended the influence of Persia in the affairs of Greece, which during his reign was distracted by the Peloponnesian war. His successor was his son Artaxerxes II. Mnemon. **IV. Darius Codomannus**, the last ruler of the Persian empire, 336–330 B. C. His father was Arsames, the son of Ostanes, who was a brother of Artaxerxes Mnemon. His mother, Sisygambis, was either the sister or cousin of his father, it is uncertain which, the marriage of brother and sister not being uncommon among Persians of high rank. The eunuch Bagoas, chief minister of Artaxerxes Ochus, having assassinated that monarch and his successor Arses, and all the royal princes, placed Codomannus upon the throne, who assumed the name of Darius. He appears to have had no connection with the crimes of Bagoas, and one of the first acts of his reign was to put the eunuch to death. He was remarkable for personal beauty and bravery. In the year in which he ascended the throne Philip of Macedon was assassinated, and succeeded by Alexander. Before the death of Philip a portion of the Macedonian troops had crossed into Asia, and immediately on his accession Darius commenced preparations to resist their advance. The death of Philip and the perils by which Alexander was surrounded at home freed Darius from any immediate apprehension, and he relaxed his efforts; but he renewed them as soon as the European campaigns of Alexander showed that he would probably become a formidable enemy. He got ready a fleet, sent troops from the interior of the empire into Asia Minor, despatched emissaries to Greece to stir up such states as were most hostile to Alexander, and placed a large body of Greeks in the pay of Persia under the command of Memnon the Rhodian. He gained some advantages over the Macedonian troops in Asia, which gave the Persian satraps a low opinion of their enemy, and they made no resistance when Alexander crossed the Hellespont into Mysia with about 35,000 men. The Persian satraps first opposed Alexander at the river Granicus, with a force largely composed of Greek mercenaries. They were completely defeated, and in the course of the following year Alexander made himself master of Asia Minor. In the spring of 333 Memnon died, and Darius, seeing that he must bring his whole force against the Macedonian invader, collected an army estimated at from 300,000 to 600,000 men. The combatants met on the shores of the gulf of Issus, in a narrow defile, where the great numerical superiority of the Persians was of little advantage, and they were totally defeated. The mother, wife, sister, and several other members of the family of Darius were captured by Alexander, and were treated kindly. Alexander now turned his forces in another direction, crossing Syria and invading Egypt, and Darius had nearly two years in which to prepare for another effort to save his empire. He made two ineffectual attempts to obtain peace by negotiation, offering to cede the whole of Asia Minor, and to pay an immense ransom for his family. His overtures were rejected, and he set about preparing for the final struggle. He assembled an army, it is said, of more than 1,000,000, and awaited the attack of Alexander in a great plain

between the Zab and the Tigris, near a village called Gaugamela, a short distance south of the ruins of Nineveh. Previous to the battle his headquarters had been at Arbela on the other side of the Zab, and hence the action is known in history as the battle of Arbela. Alexander's army numbered somewhat less than 50,000; but the discipline and bravery of the Macedonian troops and the genius of their commander triumphed. The Persian army was completely routed, and Darius fled to Ecbatana in Media (October, 331 B. C.). Here he collected a new force. Early in the following year Alexander set out in pursuit. Darius fled through Rhagæ, the Elburz mountains, and the deserts of Parthia, followed by Alexander. When almost overtaken, he was assassinated by Bessus, satrap of Bactria. Pierced with wounds, he was left upon the road, where he was found by the Macedonians. He asked for a glass of water, for which he thanked the giver, expressed his gratitude for Alexander's kind treatment of his family, and expired. Alexander on coming up covered the body with his mantle, and sent it to Persepolis to be buried in the tombs of the Persian kings.

DARK DAYS. See supplement.

DARKE, a W. county of Ohio, bordering on Indiana; area, 609 sq. m.; pop. in 1870, 32,278. The soil is fertile, and the surface generally level, occupied partly by small prairies, and partly by forests of beech, ash, walnut, hickory, and sugar maple. The Columbus, Chicago, and Indiana Central, the Dayton and Union, and the Cleveland, Columbus, Cincinnati, and Indianapolis railroads traverse it. The chief productions in 1870 were 792,203 bushels of wheat, 1,063,030 of Indian corn, 330,352 of oats, 51,854 of barley, 25,387 of flaxseed, 70,101 of potatoes, 16,558 tons of hay, 738,243 lbs. of butter, 63,323 of wool, and 167,989 of tobacco. There were 9,942 horses, 9,089 milch cows, 11,631 other cattle, 20,235 sheep, and 31,522 swine; 9 flour mills, 29 saw mills, 24 manufactories of carriages and wagons, 6 of furniture, 7 of bricks, 2 of sashes, doors, and blinds, 3 breweries, 7 tanneries, and 7 currying establishments. Capital, Greenville.

DARLASTON, a town and parish of Staffordshire, England, 4 m. S. E. of Wolverhampton; pop. of the parish in 1871, 12,841. It has extensive mines of coal and iron, and manufactures of various articles of hardware. The ore obtained from the mines is here converted into iron of different kinds and of superior quality.

DARLEY, Felix O. C., an American artist, born in Philadelphia, June 23, 1822. He was placed in a mercantile house at the age of 14, but spent his leisure hours in drawing. Some of his sketches having attracted attention, he was offered a handsome sum for them, which encouraged him to rely entirely on his pencil for support. After several years' labor in Philadelphia, during which he produced the series of drawings for the "Library of Humorous American Works," he removed in 1848 to New York, where he occupied himself in illustrating Irving's humorous writings. His elaborate outline drawings devoted to the "Legend of Sleepy Hollow" and "Rip Van Winkle" led to his recognition both at home and abroad as a worthy successor of Retzsch and Fuseli. He declined an advantageous offer to settle in London, and applied himself assiduously to his art. In 1856 his illustrations of Judd's "Margaret" were published, and gave him rank as one of the most original, graceful, and sympathetic artists of the day. Illustrations of Cooper's works, 500 in number, of Dickens's works, and of Simms's novels followed in quick succession. In 1859 appeared his drawing of the wedding procession in Longfellow's "Courtship of Miles Standish." Since then he has executed many large works, among which are four ordered by Prince Napoleon when in this country, viz.: "Emigrants Attacked by Indians on the Prairie," "The Village Blacksmith," "The Unwilling Laborer," and "The Repose." During the civil war he delineated many dramatic and characteristic scenes, including one representing Dahlgren's charge at Fredericksburg. Some of the most elaborate figures and scenes on the government bonds and legal-tender notes, and on the notes of the national banks, were designed by him. Toward the close of the war he visited Europe for the first time. He studied models in Rome, and made a large number of pencil sketches, many of which appeared in current periodicals. On his return he published "Sketches Abroad with Pen and Pencil" (New York, 1868), for which he furnished both letterpress and illustrations. He has also illustrated several other works, which he has almost made his own by the felicity of his drawings.

DARLEY, George, a British author, born in Dublin in 1785, died in London in 1849. He graduated at Trinity college, Dublin, in 1811, went to London in 1825, and became attached to the "Literary Gazette" and "Athenæum" journals, in which his criticisms of poetry and the fine arts gave him a favorable reputation. He wrote "The Labors of Idleness," "Silvia," and miscellaneous works of a mingled philosophical and poetic character, edited the works of Beaumont and Fletcher, and published an edition of Euclid and other mathematical works.

DARLING, a river of central Australia. It is formed by the union of several small streams in the province of New South Wales, and during an irregular course of more than 400 m. through a barren country, receiving the river Bogan from the S. E., it empties into Murray river. Its waters are salt for a great distance above its mouth.

DARLING, Grace, an English heroine, born at Bamborough, on the coast of Northumberland, Nov. 24, 1815, died Oct. 20, 1842. Her father was keeper of the Longstone lighthouse, on one of the most exposed of the Farne islands. On the night of Sept. 6, 1838, the Forfarshire steamer, proceeding from Hull to Dundee, was

wrecked on one of the crags of the Farne group. Of 53 persons on board, 38 perished, including the captain and his wife. On the morning of the 7th the survivors were discovered by Grace clinging to the rocks and remnants of the vessel, in imminent danger of being washed off by the returning tide. Grace, with the assistance of her parents, but against their remonstrances, immediately launched a boat and with her father succeeded in rescuing nine of them, and six escaped by other means. Presents and demonstrations of admiration were showered upon her from all parts of the United Kingdom, and a public subscription to the amount of £700 was raised for her.

DARLINGTON, a N. E. county of South Carolina, in the alluvial region of the state, bounded N. E. by the Great Pedee, S. W. by Lynch's creek, and N. W. by Cedar creek; area, 800 sq. m.; pop. in 1870, 26,243, of whom 16,146 were colored. It is well watered, and the river lands are very fertile; the uplands are inferior, but occasionally well timbered. Reclamations from the borders of the Pedee, Lynch's, and Black river have yielded vast bodies of the rich swamp lands for cultivation. The surface is undulating, sometimes rising into hills of 300 ft. The Pedee is navigable by steamers its whole length, and Lynch's for 80 m. from its junction with the former river. The Wilmington, Columbia, and Augusta, the Cheraw and Darlington, and the Northeastern railroads traverse the county. The chief productions in 1870 were 15,308 bushels of wheat, 484,076 of Indian corn, 28,392 of oats, 122,856 of peas and beans, 170,070 of sweet potatoes, 34,591 bales of cotton, and 44,154 lbs. of rice. There were 2,550 horses, 2,918 milch cows, 6,593 other cattle, and 16,947 swine; 4 saw mills and 1 machine shop. Capital, Darlington Court House.

DARLINGTON, a parliamentary and municipal borough and market town of Durham, England, on the Skerne, 18 m. S. E. of Durham, and 220 m. N. N. W. of London; pop. in 1871, 27,730. It is built in the form of a square, the centre occupied by a market place, from which radiate several streets locally called gates. It is generally well built, and contains a Gothic church founded in 1160, and three other Anglican churches. There are 18 chapels and places of worship for other denominations, of which nine are Methodist, a free grammar school, an academy founded by the society of Friends, a national school, a school of art, a town hall, a central hall, several almshouses, a dispensary, a mechanics' institute, a public library, gas works, and a savings bank. The chief branches of industry are the carding and spinning of wool, flax spinning, and the manufacture of carpets, brass, and iron. There is an extensive market for sheep and cattle every fortnight. Darlington is at the junction of the South Durham and Lancashire railway with the main Northeastern line, and thus has direct communication with the coal and iron, manufacturing, and shipping districts of the country. The first locomotive used for passenger traffic was run upon the railway between Darlington and Stockton in 1826, at the rate of nine miles an hour. The town is governed by a bailiff appointed by the bishop of Durham, and gives the title of earl to the duke of Cleveland.

DARLINGTON, William, an American botanist and politician, born in Birmingham, Chester co., Pa., April 28, 1782, died in West Chester, Pa., April 23, 1863. He received the degree of M. D. from the university of Pennsylvania in 1804, and in 1806 went to Calcutta as surgeon of a merchant ship. A sketch of his voyage, under the title of "Letters from Calcutta," was afterward published in the "Analectic Magazine." He returned in 1807, married, and for several years practised medicine at West Chester. Here he soon entered into politics, and on the breaking out of hostilities in 1812 he aided in raising an armed corps in his neighborhood, and in 1814 was chosen major of a volunteer regiment. He was a member of congress 1815–'17 and 1819–'23. He founded at West Chester an academy, an athenæum, and a society of natural history. In 1813 he began a descriptive catalogue of plants growing around West Chester, which was published in 1826 under the title of *Florula Cestrica*, afterward merged in the *Flora Cestrica*, published in 1837, and rewritten and republished in 1853, containing a complete description and classification of every plant known to exist in the county. In 1843 he edited the correspondence of his friend Dr. William Baldwin, with a memoir, under the title of *Reliquiæ Baldwinianæ*. He also published "Mutual Influence of Habits and Disease" (1804–'6); "Agricultural Botany" (1847), "Agricultural Chemistry" (1847), and "Memorials of John Bartram and Humphrey Marshall" (1849).

DARMSTADT, the capital of the grand duchy of Hesse, and of a circle of its own name, in the province of Starkenburg, situated on the small river Darm, 16 m. S. of Frankfort, and 32 m. N. of Heidelberg; pop. in 1871, including the suburb of Bessungen, 39,584, mostly Protestants. The new part of the town contains beautiful streets and squares, and fine pleasure grounds. The old town with its narrow and crooked streets is in the background, and none of the great thoroughfares pass through it. Among the remarkable buildings are the ducal palace (with a library of 450,000 volumes and 4,000 MSS.), the diet house, the mint, and the Catholic church, built after the model of the Pantheon at Rome. There are galleries of pictures and of statuary and coins, a museum of natural history, two colleges, a gymnasium, various other schools, including one for the education of artisans, a house of correction, iron founderies, breweries, 15 printing offices, a botanic garden, a military academy, an extensive armory, and many scientific and artistic societies. There are charitable institutions for the benefit of poor young girls

and for orphans and widows, and a deaconess institute established in 1857. The manufactures are linen and woollen fabrics, carpets, cards, jewelry, watches, hats, wax candles, musical, surgical, and mathematical instruments,



Grand Ducal Palace, Darmstadt.

colored paper, starch, and coaches. Six railways centre in the city.—Darmstadt, which toward the close of last century contained only about 7,000 inhabitants, is greatly indebted for its growth to the grand duke Louis I., who founded the new town, and whose statue, surmounting a Doric column 134 ft. high, adorns the Luisenplatz. The Theaterplatz has contained since 1852 statues of Philip the Generous and George I. A bank of commerce and industry was established in 1854, and the bank for southern Germany (*Zettelbank*) in 1856. In the 11th century Darmstadt was a village, and in 1330 it was made a town by Count William I. of Katzenellenbogen. On the extinction of that line Darmstadt passed into the hands of Hesse. In 1622 it was taken by Mansfeld, and in 1647 by the French. Public conventions have been often held in Darmstadt, and a customs congress in 1854. The court theatre was destroyed by an incendiary, Oct. 24–25, 1871.



Darnel (Lolium temulentum).

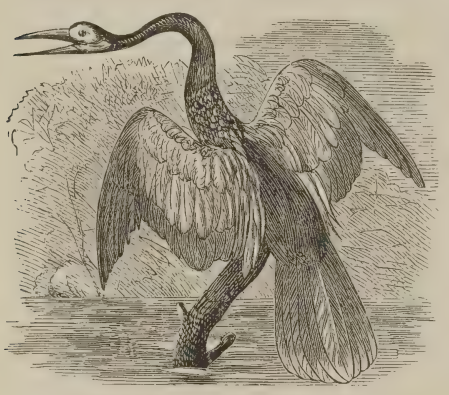
DARNEL (*lolium temulentum*, Linn.; called bearded darnel, in distinction from rye grass, which has been known as common darnel), a weed which has long infested the grain fields of Europe, and is now found in the United States, though still rare. The genus is distinguished chiefly by the inflorescence, being in close spikes, with the solitary spikelets placed edgewise along the rachis. This species has no tufts of leaves from the root, the glumes are as long as the spikelets or longer, and the latter contain five to seven florets, which are awned. Until recently it was noted as the only poisonous grass in existence; its seeds were universally considered powerfully narcotic, producing drowsiness, convulsions, paralysis, and even death, when ground up with wheat or oats; and what seemed well attested cases of such poisoning have been cited by all the authorities. But it is now said that the latest investigations in Europe have proved the complete harmlessness of darnel.

DARNETAL, a town of France, in the department of Seine-Inférieure, about 3 m. E. of Rouen, on the Aubette; pop. in 1866, 5,909. It has manufactures of flannels and other woollen goods.

DARNLEY, Henry Stuart, lord, the second husband of Mary queen of Scots, born in England in 1546, killed near Edinburgh, Feb. 9, 1567. He was the son of the exiled earl of Lennox by Margaret Douglas, daughter of the earl of Angus by Queen Margaret, widow of James IV. and sister of Henry VIII., and was therefore cousin german of Queen Mary, and a cousin of Queen Elizabeth. On his father's side he was descended from the royal line of Scotland. When Mary announced her intention of contracting a second marriage, Darnley, who possessed a handsome person and was skilled in many of the accomplishments of the age, went to Scotland to urge his suit, and was accepted. He was created earl of Ross and Albany, and renounced his allegiance to Elizabeth. His marriage with Mary took place at Holyrood house, July 29, 1565, on which occasion she proclaimed him king, and promised to induce the Scottish parliament to grant him a crown matrimonial. He was conceited, arrogant, and according to Randolph, the English ambassador, "an intolerable fool." He repaid Mary's kindness by petulance and insolence, and open profligacy and infidelity; and finally alienated her affections by his participation in the murder of her secretary, the Italian Rizzio, March 9, 1566. She threatened revenge, and said to him, "I shall never rest till I give you as sorrowful a heart as I have at this present." Shortly afterward he denounced his confederates in this act, and aided Mary in driving them from the kingdom. Even then they might have become reconciled, but his vices and follies continually widened the breach. On June 19, 1566, their son James,

afterward James I. of England, was born. In January, 1567, at Glasgow, Darnley was taken ill with smallpox, and during his convalescence was removed to a solitary house called the Kirk of Field, near Edinburgh, from an apprehension that if taken to Holyrood he might communicate his disease to the young prince. The queen visited him here several times, and seemed to manifest some tenderness for him. On the night of Feb. 9 the house was blown up with gunpowder, and the dead bodies of Darnley and his servant were found near the ruins. The earl of Bothwell, the queen's lover, was the chief actor in this tragedy, and three months later the queen became his wife.

DARTER, a bird of the order *natatores* and genus *plotus* (Linn.). The bill in this genus is longer than the head, straight, and very slender, with sides much compressed to the acute tip, and the lateral margins finely serrated; the nostrils are scarcely visible; the wings are long, the second and third primaries the longest; the tail is long, of 12 feathers, and broad toward the end, which is rounded; the tarsi are short and strong; the toes long, united by a broad web, with short, sharp, and curved claws. Four species are described by



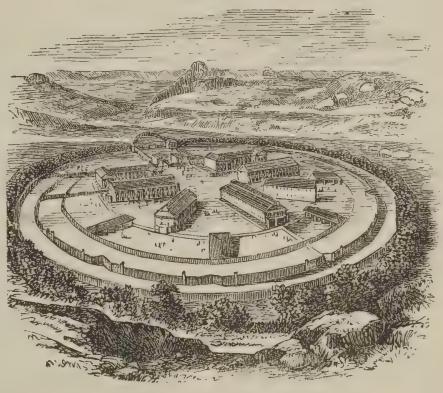
Black-bellied Darter (Plotus anhinga).

Gray: *P. anhinga* (Linn.), in the southern states of North America; *P. melanogaster* (Gmel.), in Asia; *P. Congensis* (Leach), in Africa; and *P. Novæ Hollandiæ* (Gould), in Australia. They are peculiar to warm climates, where they live in society on fresh-water rivers and lakes. The first named species, the anhinga, or snake bird, or black-bellied darter, may be taken as a type of the genus. The bill of this bird is about 3½ in. long, the length to end of tail 36 in., extent of wings 44 in., tail 11½ in., tarsus 1½ in.; weight 3¼ lbs. The head is small, the neck very long and slender, and the body elongated; at the base of the upper mandible, around the eye, and on the throat, the skin is bare, and at the latter part dilated as in the cormorant. The plumage of the head, neck, and body is close and silky, with oblong rounded feathers; from near the eye to half down the neck on each side is a series of long, narrow, loose feathers; the scapulars are elongated, pointed, compact, and stiff. The upper mandible is olive, the lower yellow, with greenish tips; around the eye greenish, sac on throat orange, iris bright carmine; the general color of the head, neck, and body, glossy dark green, and of the scapulars, wings, and tail, bluish black; the long neck feathers are purplish white or lilac; at the lower part of the neck behind are numerous oblong small white spots, forming two broad bands as they extend backward; similar rows of white spots are seen on the smaller wing coverts; the first row of small and the secondary coverts are white; the tail is tipped with a band of brownish red, fading into white. In the female, which is smaller, the upper part of the head and the hind neck are dull greenish brown, and the fore part of the neck pale reddish brown with a grayish tinge, extending over the breast and ending abruptly in a reddish chestnut band; otherwise the colors are as in the male, except that the spots are less distinct, and that the fore part of the back has a brownish tint. In appearance and habits the darter resembles the cormorant, especially in the structure of the feet, wings, and tail; the bill is like that of the heron, as also is the neck, which forms the same sudden curvature between the seventh and eighth vertebræ. According to Audubon, there are no external nostrils in the adult, though small ones are found in the young. This bird is a constant resident in Florida, and the lower parts of Louisiana, Alabama, and Georgia; in spring it goes as far up as North Carolina, breeding along the coast; in these various localities it bears the names of water crow, Grecian lady, water turkey, and cormorant. They arrive in the Carolinas from March to April, and remain till November, preferring rivers, lakes, and lagoons in the interior, in low situations and secluded spots; though sometimes seen near the sea, they are not known to fish in salt water; they do not like rapid streams or clear water, but delight in the slimy and stagnant pools of inaccessible morasses, where a few large and naked trees in the centre afford good stands for taking their prey or observing an enemy. From the character of the water they prefer, which would prevent their seeing a fish beneath its surface, they do not dive from an eminence or on the wing, but drop silently from the trees into the water, swimming about and diving from the surface like the cormorant. They are excellent swimmers, very light on the water when not afraid, but sinking all but the head and neck on the approach of an enemy; when swimming in this manner, the sinuous motions of the head and neck resemble the movements of a snake, whence the common name of snake bird. After securing a fish, the bird comes to the surface, throws it into the air if not too large, and swallows it whole, head first. Its food consists of various small

fishes, crawfish, shrimps, young reptiles, aquatic insects, eggs of frogs, young leeches, &c., and in confinement even boiled maize. The quantity of fish they will consume is enormous; but like other flesh and fish-eating birds, they can remain several days without food. The flesh is tough, oily, and unfit for food, except the small pectorals of the female. They are gregarious in winter, fishing entirely by day, and fond of returning nightly to the same roosting places, which are always over water; they are not very shy in their favorite haunts, where they are seldom molested. Their flight is swift, well sustained, and often at an immense height, where they sail about in graceful curves, especially in the love season; on land they walk and run well, much better than the cormorant, holding the tail up, and darting the head about continually, distending the pouch, and uttering rough guttural sounds. As divers they are unsurpassed by fresh-water birds, disappearing with the utmost quickness, and swimming beneath the surface for a long distance by means of the feet, the wings partially spread and the tail expanded. Asleep, they stand with the body nearly erect, the head under the scapulars. In East Florida they breed toward the end of February, in Louisiana in April or May, and in South Carolina in June; Audubon supposes the same birds may breed twice a year in widely separated localities. The nest, made of sticks, is flattened, and is generally in tall water-surrounded cypresses; the eggs are three or four, 2½ in. long, of a light blue color, covered with a whitish chalky substance. The birds attain their full plumage during the first year, and retain it through life. When wounded, the sharp bill proves a formidable weapon of defence. According to Audubon, the quills and tail feathers, as in the cormorant, have the shaft hollow, even to the tip, with transparent walls of the same nature as the barrel, which last is the same as in other birds.

DARTFORD, a market town of Kent, England, on the Darent, 17 m. by the North Kent railway S. E. of London; pop. in 1871, 5,314. It is in a valley at a ford in the river, from which it takes its name, and consists chiefly of one wide street on the Dover road. It has a large ancient church, the ruins of a nunnery founded in 1371, a large iron foundery and machine shop, grain, oil, powder, paper, and cotton mills, calico and silk printing works, and gas works. The first mill in England for rolling and slitting iron was near this town. The river is navigable from this point to its junction with the Thames. Dartford is noted in history as the place where the insurrection under Wat Tyler broke out in 1381.

DARTMOOR, a desolate tract of land in Devonshire, England, extending from N. to S. about 22 m., and from E. to W. 14 m., at an elevation of 1,700 ft. above the sea; area estimated at about 150,000 acres. The surface is alternately swamp and barrens, producing a coarse grass on which cattle and sheep subsist during the summer months. Numerous hills of granite, called *tors*, break the surface, and rise to a considerable elevation, Yes tor being 2,050 ft., and Cawsand Beacon hill 1,792 ft. above the sea level. Of these tors, 150 are enumerated in Carrington's poem on Dartmoor. In the centre of the moor is an extensive swamp, in which the rivers Dart, Teign, Taw, Erme, Yealm, and 50 smaller streams take their rise. The climate is at all times cold and moist. Storms from the Atlantic sweep over the moor, and it is difficult to imagine a more desolate spot during winter. A few scattered hamlets, occupied by quarrymen, contain the only population. There are productive tin mines at Wheal, Duchy, and Birch tor, and copper and manganese are found. Druidical remains may be traced in many places, especially below Sittaford tor, at Grimspound, and at Drewsteignton. The greater part of the tract was afforested under



Dartmoor Prison.

the name of Dartmoor forest by King John. Under Edward III. it was united to the duchy of Cornwall.—Dartmoor is chiefly noted as the site of a prison built in 1809, at a cost of £127,000, for the custody of French prisoners of war. At one time it contained 10,000 inmates. On the breaking out of hostilities with the United States in 1812, 2,500 impressed sailors, claiming to be American citizens, and refusing to serve in the British navy against their country, were imprisoned in Dartmoor, where most of them were kept till the end of the war. Accounts of the harshness of their treatment reached the United States, and created much feeling. This was especially the case on an occasion when the guard fired upon the prisoners. Explanations, however, have shown that the occurrence was the result of a mistake. The Dartmoor prison enclosures occupy an area of 30 acres, encircled by a double line of lofty walls. In 1850 the prison was fitted for the reception of convicts. About one half the annual expense of maintaining the institution is repaid by the industrial employments of the inmates.

DARTMOUTH, a municipal borough, seaport, and market town of Devonshire, England, on the W. shore of a bay formed by the Dart, at its entrance into the English channel, 32 m. S. W. of Exeter; pop. in 1871, 4,978. It is built on the side of a hill, which is so steep that the base of the houses in the upper street is but little below the chimney pots of those in the street below. The thoroughfares are dirty, irregular, and narrow, but are lighted with gas. Many of the houses are very old, and display some fine specimens of wood carving. The town contains three churches, several chapels, schools, and almshouses, a market place, and remains of a castle supposed to be of the reign of Henry VII. The harbor, which is entered by a narrow channel between the fort and battery of St. Petrox and the old castle, is safe, convenient, and large enough for 500 ships. Many vessels belonging to this port were formerly engaged in the Newfoundland fisheries, but this industry has greatly declined. Ship building, rope making, and paper making are carried on to some extent; there is an export trade in woollen goods, cider, and barley, in exchange for wine, oil, salt, and fruit; and slate and limestone are quarried in the neighborhood. The Dartmouth branch of the South Devon railway was completed in 1864, and the trade of the town has since increased. Many improvements have recently been made in the streets. During the civil wars the town was twice captured, once by the royalists and once by the parliamentarians. It gives the title of earl to the Legge family, and is one of the quarantine ports of the channel.



Dartmouth College.

DARTMOUTH COLLEGE, an institution of learning in Hanover, N. H. The college buildings front on a fine campus on an upland plain near the Connecticut river. Dartmouth hall is a long central building, containing the chapel, while in line with it are Wentworth and Thornton halls. In front of this line is Reed hall, containing the college library. These buildings are old and plain. East of the line is Culver hall, a handsome new structure, 100 by 60 ft. and four stories high, containing laboratories, recitation and lecture rooms, and rooms for the various cabinets and museums. North of the college is the Chandler scientific school, while the medical college and the observatory are in the vicinity. The government of the college is vested in a corporation of 12 members, of whom the governor of New Hampshire for the time being is one. Eight of the members must be residents of the state, and seven must be laymen. The college comprises an academic, a scientific, and an agricultural department, in each of which a partial course may be taken, embracing two at least of the prescribed studies. The academic year, beginning about the first of September and ending with commencement on the last Thursday in June, is divided into two terms of 20 weeks each. A public examination is held at the end of each term. Instruction is administered by recitations and lectures, chiefly the former. The regular course in the academic department extends through four years, upon the completion of which the degree of bachelor of arts is conferred. All the studies are required, except that in the first term of the sophomore year French may be taken instead of mathematics, and in the second term of the junior year Greek and Latin are optional with mathematics. The tuition fee for each student is $70 per annum, while the expenses for room rent, board, fuel, and lights average from $120 to $200 a year. Aid is given to indigent students, mainly in the form of scholarships, usually of $70 per annum, but in some cases $100. In 1874 upward of 100 scholarships were available. Prizes amounting to about $500 are annually awarded. The Chandler scientific department was founded in 1852, pursuant to a bequest of $50,000 made by Abiel Chandler, late of Walpole, N. H., and formerly of Boston, Mass. The regular course comprises four years, at the end of which the degree of bachelor of science is conferred. The degree of master of science is conferred in course upon a bachelor of science of three years' standing or more, on payment of $5. French and German are included among the studies, while Latin and Greek are omitted. The cost of tuition in this department is $60 a year. The agricultural department was established in 1866 by the legislature, under the title of the "New Hampshire College of Agriculture and the Mechanic Arts," in fulfilment of the act of congress for this purpose. It was organized under a board of nine trustees, appointed partly by the governor and council and partly by the

corporation of the college. There are two terms in each year, extending from about the first of September to the last of April, with a winter vacation of four weeks. The course of instruction extends through three years, and embraces mathematics, physics, drawing, book-keeping, botany, chemistry, physiology, zoölogy, mechanics, political economy, and geology. Applicants for admission must be at least 16 years of age, and pass a satisfactory examination in arithmetic, English grammar, geography, and history. During the first year all students pursue the same studies; at the beginning of the second year they are required to select either the special course of agriculture, or the course of mechanic arts. In the immediate vicinity of the college is an experimental farm of 165 acres, which also furnishes to students opportunities for remunerative labor. A new building is soon to be erected, containing rooms for the farm superintendent and for students. It will embrace a boarding establishment, which will be supplied with the products of the farm, and where board will be furnished to students at cost. The degree of bachelor of science will be conferred upon those who have completed the entire course of agriculture or mechanic arts and have passed the final examination. The cost of tuition is $15 per term. A special course of instruction in civil engineering for advanced students has been established by means of $70,000 given for that purpose by the late Gen. Sylvanus Thayer of Braintree, Mass. It is designed to extend through at least two years, a portion of each being given to outdoor practice. The medical department was founded in 1797, and was formerly known as the New Hampshire medical college. There is an annual course of lectures, beginning early in August and continuing 14 weeks. Medical instruction is also given by means of recitations, for which purpose there are two terms of 14 weeks each, beginning in December and in March. Students 21 years old and upward, who have devoted three years to the study of medicine, and during that time have attended two courses of medical lectures, including one at Dartmouth, may upon examination receive the degree of doctor of medicine. By a recent gift of $10,000 from E. W. Stoughton of New York, a museum of pathological anatomy has been formed.—The faculty of the college comprises, besides the president and librarian, 26 professors, 2 lecturers, and 7 instructors. In 1873–'4 the total number of students was 420, including 262 in the academical, 79 in the scientific, 52 in the medical, 22 in the agricultural, and 5 in the civil engineering department. These students represented 23 different states and territories, Nova Scotia, Canada, Liberia, and Japan. According to the triennial catalogue of 1873, the whole number of alumni was 3,907, of whom 2,077 were living. The several libraries connected with the college contain 47,200 volumes. The astronomical and meteorological observatory contains, besides other valuable instruments, a new telescope of $9\frac{4}{10}$ inches aperture and 12 ft. focal length, made by Clarke of Cambridgeport, Mass. The college is provided with extensive philosophical apparatus, a museum of geology and natural history, chemical laboratory, and other valuable collections. A gymnasium has recently been erected at a cost of $24,000, the gift of George H. Bissell of New York.—Dartmouth college received its charter in 1769, and went into operation in the following year under the presidency of Eleazar Wheelock, D. D. It grew out of an earlier school established by the Rev. Mr. Wheelock in Lebanon, Conn., and designed for the education of Indian children. The idea of this school had been suggested to him by his success in educating a young Mohegan Indian, Samson Occom, who became a remarkable preacher. Other pupils from the Delaware tribe were afterward received, and the school became an object of public attention and interest. In 1754 a farmer named Joshua Moor gave a house and two acres of land for the purposes of the institution, which was from this time known as Moor's Indian charity school. Occom, accompanied by the Rev. Nathaniel Whitaker, visited England to collect funds; a sum of about £10,000 was subscribed, and a board of trustees was there organized, of which Lord Dartmouth, one of the subscribers, was made president. The school was so much resorted to by the native tribes, that Dr. Wheelock determined to transfer it to some place nearer to them. Many proffers of situations were made; the town of Hanover, on the Connecticut river, in the western part of New Hampshire, was selected, and grants of about 44,000 acres of land were made. The institution was chartered by Gov. Wentworth, under the name of a college, with all the privileges and immunities of any university within the British realm; and the name of Lord Dartmouth was adopted for it. Moor's school soon afterward obtained an independent charter, and remained as an academical or preparatory department till 1849. A small fund still exists for the education of Indians. In 1770 Dr. Wheelock removed his family and school, consisting of 18 whites and 6 Indians, from Lebanon to the wilderness of Hanover, where they lived in log huts. In 1771 the first class of four students was graduated. President Wheelock retained his office till his death in 1779, and was succeeded by his son John Wheelock, who in 1782 was sent by the trustees to Europe to promote the interests of the college; and through introductions by Gen. Washington, Dr. Franklin, and John Adams, he obtained considerable sums of money, philosophical instruments, and other valuable donations. The prince of Orange was one of the donors. He returned in 1784, and, after a presidency of 36 years, was removed from the office by the trustees in 1815. This act, which was occasioned chiefly by a local religious controversy,

led to a conflict with the legislature of the state; that body claimed the right to amend a charter of which it was the guardian, and in 1816 passed acts creating a new corporation in which the property was vested, and changing the title of the college to Dartmouth university. The old trustees began a suit for the recovery of the college property, which was decided against them in the supreme court of the state. It was carried by appeal before Chief Justice Marshall in the supreme court of the United States, where the judgment was reversed, and the principle of the inviolability of chartered property fully established. It was by his elaborate argument in behalf of the plaintiffs in this case that Daniel Webster, at the age of 35, took rank among the most distinguished lawyers in the country. The question excited also a violent controversy in the local newspapers. Wheelock was raised to the presidency of the university by the new board, in February, 1817, but died within two months, and was succeeded by William Allen, D. D., who retained the office till the decision of the question in favor of the college by the supreme court in 1819. Francis Brown, D. D., was the successor of Wheelock as president of the college, having been elected by the old board in 1815, and retained the office till his death in 1820. He was succeeded in the presidency by the Rev. Daniel Dana, who after one year was succeeded by Bennet Tyler, D. D. Upon the resignation of Dr. Tyler in 1828, Nathan Lord, D. D., was chosen president, and performed the duties of that office till 1863, when he was succeeded by the Rev. Asa Dodge Smith, LL. D., of New York, who still retains the office.

DARU. I. Pierre Antoine Noël Bruno, count, a French statesman and author, born at Montpellier, Jan. 12, 1767, died near Meulan, Sept. 5, 1829. He entered the army in 1783, and from 1784 to 1791 was commissary of war. Adopting the principles of the revolution, he served as ordnance commissary in the army of Brittany, but was imprisoned during the reign of terror, and recovered his liberty on the 9th Thermidor. In 1796 he became commissary in the ministry of war, and during this period pursued his literary studies, publishing in 1797 a translation of Horace. After Napoleon's return from Egypt he was nominated inspector of the troops and secretary of the ministry of war, was elected tribune in 1802, and under the empire in 1805 and 1806 became councillor of state, intendant general of the household of Napoleon, intendant general of the grand army, and member of the French academy. He acted as plenipotentiary in the execution of the convention of Alexandria and the treaties of Presburg, Tilsit, and Vienna. In 1811 he became minister of state; and in the next year he strongly opposed the Russian campaign, in which as intendant general of the army he displayed all the resources of his courage and talent. He was one of the last to give in adherence to the reëstablished Bourbons, and was among the first who rallied about Napoleon when he reappeared from Elba. After the second restoration he was exiled to Bourges, where he composed his *Histoire de la république de Venise* (7 vols., 1819–'21). In 1819 he was recalled from exile and made a peer, and until his death was an eloquent opponent of the reactionary tendencies of the government. He published several poems and satirical epistles, *Éloges* of Sully, Volney, and Laplace, *La cléopédie, ou la théorie des réputations littéraires* (1800), an *Histoire de Bretagne* (Paris, 1826), and reports on the rupture of the treaty of Amiens, the monetary system, public instruction, the right of petition, individual liberty, and the censorship of the press. **II. Napoléon,** count, a French statesman, son of the preceding, born in Paris, June 11, 1807. He was godson of Napoleon and Josephine. At an early age he entered the army, served in Algeria, and resigned in 1847, having attained the rank of captain. In 1832 he entered the chamber of peers by hereditary right, and was an ardent supporter of the monarchy. After the revolution of 1848 he supported the new government, representing the department of La Manche both in the constituent and the legislative assembly. In 1850 and 1851 he was chosen vice president of the latter body; but after the *coup d'état* of Dec. 2, 1851, which he opposed, he retired from public life. In May, 1869, he was elected a member of the corps législatif. In December of that year he was elected vice president of the chamber, and in January, 1870, was appointed minister of foreign affairs in the new cabinet formed under the presidency of M. Ollivier. In April, however, having vainly opposed the *plébiscite* of the following month, he resigned, and during the Franco-Prussian war remained in retirement. After the meeting of the national assembly at Bordeaux in February, 1871, he again appeared in public life, and subsequently became a supporter of the administration of President Thiers.

DARWAR, or Dharwar. I. A district of the Bombay presidency, British India, bounded N. by Belgaum, E. by the Nizam's territory and Bellary, S. by Mysore, and W. by North Canara; area, 9,122 sq. m.; pop. in 1871, 883,611. The soil and climate are adapted to the growth of cotton, and in 1842 the New Orleans species of that plant was introduced with such success that in 1851 nearly 43,000 acres of it were under cultivation. The cotton is shipped at Coomta. The district formed part of the ancient kingdom of Bejapoor, and was overrun by Sevajee in 1675, and by Hyder Ali in 1777. It is comprised in the region known as the South Mahratta country, but nearly all the inhabitants are Canarese. It was acquired by the British on the overthrow of the Peishwa in 1818. **II.** The chief town of the district, situated near the W. frontier, 70 m. E. of Goa, and 288 S. E. of Bombay. It is defended by a wall and ditch, and a fortress originally strong,

but now much decayed. It is the seat of three government schools, one Mahratta, one Canarese, and one English. It was captured by Hyder Ali in 1778, and retaken by the British and Mahrattas in 1791.

DARWEN, a town of Lancashire, England, 3½ m. S. of Blackburn and 16 m. N. N. W. of Manchester; pop. in 1871, 26,553. It is laid out with little regularity, but is well built, and supplied with gas and abundance of water. The principal branches of industry are cotton manufactures, paper making and staining, silk weaving, and carpet making. There are also print, dye, and bleaching establishments, rope and twine works, machine works, and iron and brass founderies. Three fairs are held here annually.

DARWIN, Charles Robert, an English naturalist and author, son of Dr. R. W. Darwin, and grandson of Dr. Erasmus Darwin, born in Shrewsbury, Feb. 12, 1809. He received his early education at the Shrewsbury grammar school, and in 1825 went to the university of Edinburgh, where he studied for two years; he then entered Christ's college, Cambridge, where he took his degree in 1831. In the autumn of the same year he volunteered as naturalist to accompany Capt. Fitzroy in the ship Beagle, on his exploring expedition around the world. The Beagle sailed from England Dec. 27, 1831, and returned Oct. 2, 1836. During this long voyage the greater part of the South American coast, the Pacific islands, Australia, New Zealand, and the Mauritius were visited and examined. Before his return Mr. Darwin was elected a fellow of the royal society (1834). In 1839 a narrative of the voyage was published in three volumes, of which the third, containing an account of the discoveries in natural history and geology, was contributed by Mr. Darwin. A second edition of this volume was published separately in 1845. In 1842 he published "The Structure and Distribution of Coral Reefs;" in 1844, "Geological Observations on Volcanic Islands;" and in 1846, "Geological Observations on South America." He also edited "Zoölogy of the Voyage of the Beagle," published in 1843, and wrote numerous papers on scientific subjects. In 1851 and 1853 appeared his two volumes entitled "Monograph of the Family Cirripedia," and soon after two other volumes on the fossil species of the same class. In 1853 the royal society awarded the royal medal to him, and in 1859 he received the Wollaston medal from the geological society. In the latter year was published his "Origin of Species by means of Natural Selection." This work has passed through many editions in English, has been translated into a number of foreign languages, including French, German, Dutch, Italian, and Russian, and has been the subject of more reviews, pamphlets, and separate books than any other volume of the age. A catalogue of the literature of Darwinism, entitled *Die Darwinische Theorie*, giving 36 octavo pages of the titles of works and the names of 312 authors, has been published by J. W. Spengel of Berlin. Darwin's work is an attempt to account for the diversities of life on our globe by means of continuous development, without the intervention of special creative fiats at the origin of each species; the extreme conclusion of which is the physiological relationship and community of origin of all living beings. (See Evolution.) Darwin's views have been adopted by some of the most scientific men of the age, while by others they are denounced as unfounded and absurd. In 1862 he published a work on the "Fertilization of Orchids," and in 1868 "Variation of Animals and Plants under Domestication." In 1871 appeared his treatise on "The Descent of Man, and Selection in Relation to Sex." This work is complementary to that on the origin of species, and is an attempt to prove the descent of man from a lower order of animal life. The author infers that "man is descended from a hairy quadruped, furnished with a tail and pointed ears, probably arboreal in its habits." In 1864 he received the Copley medal from the royal society. He has been elected a member of numerous English and foreign scientific bodies, has been created a knight of the Prussian order of merit, and in 1871 was chosen a corresponding member of the academy of Vienna. Among separate papers by him, some of the more important are: "On the Connection of certain Volcanic Phenomena in South America," "On the Distribution of Erratic Bowlders in South America," "On the Formation of Mould by the Earthworm," and "On the Geology of the Falkland Islands," all published in the transactions of the geological society. In the journal of the Linnæan society have appeared the following: "On the Dimorphous and Trimorphous States of Primula," and "On the Movements and Habits of Climbing Plants." The latter has been published in a separate volume. His latest work is "On the Expression of the Emotions in Men and Animals" (1872).

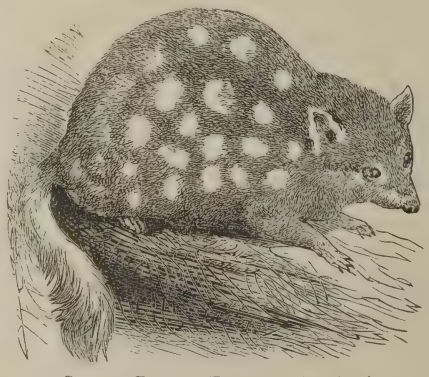
DARWIN, Erasmus, an English physiologist and poet, born at Elton, Nottinghamshire, Dec. 12, 1731, died at Derby, April 18, 1802. He studied at Cambridge, graduated at Edinburgh, and settled as a physician at Lichfield. The work by which he is best known is "The Botanic Garden," a poem in two books, the first explaining the economy of vegetation, the second personifying "the loves of the plants." Gnomes, sylphs, nymphs, and salamanders were adopted to give machinery to the poem. He next published "Zoönomia, or Laws of Organic Life," a curious physiological essay. In 1800 he published "Phytologia, or Philosophy of Agriculture and Gardening;" also "Letters on Female Education," addressed to his daughters. A poem entitled "The Temple of Nature" appeared after his death (1803). Darwin's writings were very popular in their day. Miss Seward published his memoirs in 1804.

DASENT, George Webbe, an English author, born about 1818. He was educated at King's college, London, and Magdalen hall, Oxford, where he graduated in 1840. He was called to the bar in 1852, but has devoted himself mainly to the study of Scandinavian literature, residing for some time in northern Europe. For several years he was one of the staff of the London "Times," and he has been frequently employed as an examiner in the English and modern languages in connection with the civil service appointments. In 1870 he was appointed civil service commissioner, and in 1871 succeeded Mr. Froude as editor of "Fraser's Magazine." He has published "The Prose or Younger Edda of Snorro Sturleson," translated from the Norse (1842); "Theophilus Eutychianus, from the original Greek, in Icelandic, Low German, and other Languages" (1845); "The Norsemen in Ireland" (1855); "Popular Tales from the Norse" (1858); "The Story of Burnt Njal" (1861); "Selection of Norse Tales, for Children" (1862); Annals of an Eventful Life," a novel (1871); and "Lady Sweetapple, or Three to One" (1872). He has also contributed papers to periodicals upon subjects relating to Norse literature and history, including one on "Ancient Iceland" in the "Oxford Essays." A collection of his essays was published in 1873, under the title of "Jest and Earnest."

DASH, Countess, the pseudonyme of a French authoress, born in Paris about 1805, died there, Sept. 9, 1872. She was a daughter of M. de Courteras, and married the marquis de St. Mars. Reverses of fortune made her seek a literary career; and on her remarking that she wished to write under an assumed name, that of her favorite dog "Dash" was suggested, which she adopted. Her first work, *Le jeu de la reine*, was published in 1839. Prominent among her works are *La belle aux yeux d'or* (1860), *Les galanteries de la cour de Louis XV^e^* and *La sorcière du roi* (1861), *Le nain du diable* (1862), *Les dernières amours de Mme. Dubarry* (1864), and *La bague empoisonnée* (1866). A collection of her works was published in 1864, in 34 volumes.

DASHKOFF, Yekaterina Romanovna, a Russian princess, born in 1744, died near Moscow, Jan. 4, 1810. She was the third daughter of Count Roman Vorontzoff, received a literary education at the house of her uncle the grand chancellor, and early exhibited an independent and energetic spirit. When hardly past childhood she was introduced into the court, and became attached to the person of the future empress Catharine II. In her 16th year she married Prince Dashkoff, with whom she lived for some time in Moscow, and then returned to the court, where her sister Elizabeth had become the favorite of the new emperor, Peter III. Jealous lest her sister should ascend the throne, and disgusted with the despotism and disorders of the court, she became at the age of 18 the soul of a conspiracy which deprived Peter of his throne and life, and made his German wife the autocrat of Russia. The means she employed to strengthen this conspiracy were often questionable; and at the execution, dressed in male costume and mounted on horseback, she commanded a body of soldiers. But the scanty rewards the empress bestowed upon her by no means answered the expectations of the princess; her request to be appointed colonel of the imperial guard was refused, and her independence of character and bluntness of manners soon deprived her of the imperial friendship. Retired from court, she devoted herself to study and the society of scholars; and after the death of her husband she travelled through the west of Europe. On her return to St. Petersburg in 1782, she met with a more favorable disposition on the part of the empress, who appointed her to the presidency of the academy of sciences, and in 1784 to that of the new Russian academy. She took an active part in the elaboration of the great Russian dictionary, which was completed according to her plan. She also wrote plays and contributions in prose and verse for periodicals, and edited a monthly magazine. After the death of Catharine (1796), she was commanded by Paul to retire to a poor village in the government of Novgorod, "where she could meditate on the events of 1762." The intercession of her friends finally released her from this exile, and she spent the last years of her life on an estate near Moscow. The "Memoirs of the Princess Daschkaw, Lady of Honor to Catharine II., edited from the Originals by Mrs. Bradford" (2 vols. 8vo, London, 1840), were written from a manuscript of the princess which has been destroyed.

DASYURE (*dasyurus*, Geoff.), a genus of Australian marsupials, including the common dasyure and the Tasmanian or native devil. The latter (*D. ursinus*), called also ursine opossum, fairly earns its title from its great ferocity, even



Common Dasyure (Dasyurus viverrinus).

when well treated in captivity. Its fierceness makes it more than a match for the most powerful dog. Its general color is black, with a conspicuous white band across the breast, and here

and there white spots; the body is short, the limbs thick, head short and thick, with blunt muzzle and wide mouth; hind feet plantigrade, giving it the gait of a small bear; the length of the body is about 21 in., the tail being 7 more, and thickly covered with hair. The teeth are: incisors $\frac{8}{6}$, canines $\frac{1}{1}$–$\frac{1}{1}$, molars $\frac{6}{6}$–$\frac{6}{6}$ = 42. It is very voracious, and was formerly destructive to the poultry of the settlers; its flesh was frequently eaten, having somewhat the taste of veal. They are now rarely seen except in the unexplored forests, where they dwell in burrows made by their powerful claws; they have the large and sensitive eyes characteristic of nocturnal animals. The common dasyure (*D. viverrinus*) is smaller, far less savage, and brown with numerous white spots; tail long but not prehensile. Other species are described in Australia and the neighboring islands; they are all voracious, feeding on small animals, fish, mollusks, and even carrion. The common and smaller species live in trees, while the ursine dasyure burrows in the ground.

DATE PALM (*phœnix dactylifera*), a tropical fruit tree belonging to a genus of about a dozen species, of which it is the most important.



Date—Spathe, Flowers and Fruit.

The generic name is perhaps derived from Phœnicia. The trunk is rough with the scars of fallen leaf stocks, and when in a wild state is exceedingly spiny from the adherent or persistent stalks. Although rather slow in growth, it sometimes attains a height of 80 ft. The leaves are pale green, pinnatisect, bearing linear leaflets which are more or less conduplicate at the base, a peculiarity of this genus, and the lower leaflets often assume the form of spines. A grove of young date palms is an impassable jungle, from the closeness and rigidity of the leaves. The flower spathes, which appear in the axils of the leaves, are woody and contain branched spadices with many flowers; more than 11,000 have been counted on a single male spadix. As the flowers are dicœcious, it is necessary to impregnate the female blossoms artificially to insure a good crop. The male spadices are cut off when the pollen is ripe, and carefully shaken over the female ones. The fruit varies much in size and quality, and in the oases of the Sahara 46 varieties have been named. In Egypt the date is an important article of revenue, as the government taxes each tree, of which more than 2,500,000 are registered. A single tree will bear from 1 to 4 cwt. in a season. In Fezzan the fruit ripens about the end of August. When dry, it is buried in the sand, and may thus be kept two years. As an article of food, the date is of great importance; but it is considered heating, and so is seldom used on long journeys, as it provokes thirst. In their native countries dates are not much relished in the crushed and dirty condition in which they are brought to our markets. The stone is long, narrow, and hard, and it germinates from the centre of its long convex side; from the nutriment it contains, it is of use, after soaking and bruising, as fodder for cattle. The date palm is easily propagated, either by seed, or more commonly by offshoots from the roots, and in eight years will bear a full crop. In countries where the temperature does not allow of the fruit's ripening, this palm is planted both for ornament and for its leaves, as in northern Italy, where the leaves are sold to Catholics for Palm Sunday and to Jews for the feast of tabernacles. As the date palm grew at Jericho, it is supposed to have been these "palm branches" which were strewn in the path of the Saviour on his entry to Jerusalem. When the heart of the leaves is cut, a thick honey-like juice exudes, which by fermentation becomes wine or vinegar. From the leaves are manufactured baskets, brushes, mats, coverings for roofs and walls of houses, and innumerable utensils; the stem furnishes timber for houses, fences, fuel, &c.; the fibre from the base of the leaves may be spun into cords and ropes; and the stem yields a sort of starch. The date palm grows abundantly in Egypt, Arabia, Persia, and the neighboring countries, and in former times was much cultivated in the Canary islands. The *P. sylvestris* and *P. farinifera* are natives of India, and the former so much resembles the date palm that it is often confounded with it; as a source of sugar it is superior. The other species of *phœnix* are little known.

DATE PLUM (*diospyros*, from Gr. Διός πύρος, the grain of Jove), a genus of large, hard-wooded, thick-leaved trees belonging to the natural order *ebenaceæ*. They have single, axillary flowers, with a four-cleft and sometimes five-cleft calyx and corolla, and eight or sometimes more stamens. The fruit of all the principal species is nearly egg-shaped, and its flesh is soft and pulpy; in size, however, it greatly varies with the different kinds. Among the most important species are those producing ebony. These are *D. reticulata*, growing in the Mauritius; *D.*

melanoxylon and *D. ebenaster*, from which the East Indian ebony is obtained; and *D. ebenum*, from which comes the Ceylon ebony. The ebony is only the core of the tree; the outer wood is soft and light-colored. *D. quæsita* also has a very hard and beautiful ornamental wood, much used for cabinet purposes in Ceylon, where the tree is found. The principal species of which the fruit is used are the *D. kaki* or Chinese date plum, whose fruit is about the size of a small apple, with a soft, plum-like pulp; and the familiar *D. Virginiana*, so well known in America as the persimmon. The fruit of the latter is small, yellow, and pulpy; it has an exceedingly acrid flavor,



Chinese Date Plum (Diospyros kaki).



Persimmon (Diospyros Virginiana).

and is only eatable when entirely ripe, or touched by frost. In the southern states persimmons are used for a variety of purposes, and a kind of liquor is made from them. An infusion of the bark has been used as a febrifuge, and is said to be efficacious in cases of diarrhœa.

DATURA, a genus of rank, poisonous, narcotic plants, of the order *solanaceæ*, having showy flowers, some of which possess fragrance as well as beauty. The word *datura* is said to be derived from the Arabic *tatorah*, which indicates the oriental origin of the herb. Two varieties of *D. stramonium* (known as thorn-apple, and also in some parts of this country as Jamestown weed) grow in the United States, one having a green stem and white flowers, the other a dark red stem and purple flowers. The latter is sometimes considered a distinct species (*D. tatula*). The leaves and seeds are officinal under the name stramonium. Their activity depends upon a crystallizable alkaloid called daturia, which closely resembles atropia and hyoscyamia chemically and physiologically. Stramonium gives rise to symptoms closely resembling those produced by belladonna and henbane, such as dryness of the throat, active delirium, usually of a whimsical and fantastic



Datura stramonium.

character, dilatation of the pupils, and a rapid pulse. Death may occur, with coma and convulsions. Accidental poisoning, especially in children, is not very rare, the plant with its seeds being abundant about dwelling houses and waste places. The leaves and bruised roots, smoked like tobacco, are often efficient in relieving the paroxysms of spasmodic asthma. This practice was introduced into England from the East Indies, where the *D. ferox* is used for this purpose. Ten to 30 grains of the leaves are sufficient for once smoking. They should be smoked with caution, and the practice discontinued if it produces vertigo or dryness of the throat. Stramonium is also used for the relief of spasmodic cough, neuralgia, and dysmenorrhœa; and oculists employ it locally to produce dilatation of the pupil. It is given in the form of the powdered leaves of the plant, of extract, and of tincture. The dose of the leaves is from 1 to 3 grs.; of the extract, $\frac{1}{4}$ to $\frac{1}{2}$ gr.; of the tincture, from 10 to 30 drops. The active

principle, daturia, is rarely used in medicine by itself.—*D. fastuosa* has a polished, purple stalk, large leaves, and beautiful flowers, of a rich purple outside, pure satiny white within, of an agreeable odor, sometimes also having semi-double blossoms. The odor of *D. Wrightii* is also pleasant; its flowers are large, of a creamy white, delicately tinted with violet as they fade. *D. arborea* (now *Brugmansia*) is one of the



Datura arborea.

greatest ornaments of gardens; its flowers are trumpet-shaped, nearly a foot in length, coming out of the division of the branches, pale yellowish outside and white within, and diffusing a delightful fragrance in the open air. They are all raised from seeds or propagated by cuttings, and even the roots of the herbaceous kinds survive if protected from severe frost.

DAUB, Karl, a German theologian, born in Cassel, March 20, 1765, died in Heidelberg, Nov. 22, 1836. He was educated at the gymnasium of Cassel and the university of Marburg, where he remained three years as a tutor. In 1794 he became professor of philosophy at Hanau, and a few months later of theology at Heidelberg, retaining the latter post till his death. His writings are of great value from their reflecting in succession the influence upon theology exercised by the several schools of philosophy which gained ascendancy during his time. His *Lehrbuch der Katechetik* (1801) is written in the spirit of Kant's philosophical criticism. His *Theologumena* (1806) and *Heidelberger Studien* (1808) follow the method of Schelling's philosophy of identity. *Judas Iscarioth, oder Betrachtungen über das Böse im Verhältnisse zum Guten* (1816), is full of mysticism. His last work, *Die dogmatische Theologie jetziger Zeit* (1833), is written in accordance with the dialectics of Hegel. His theological and philosophical lectures were collected after his death by Marheineke and Dittenberger (7 vols., Berlin, 1838–'43). An analysis of Daub's theology may be found in Strauss, *Charakteristiken und Kritiken* (Leipsic, 1839).

DAUBENTON, Louis Jean Marie, a French naturalist, born at Montbar, May 29, 1716, died in Paris, Jan. 1, 1800. Destined for the church, he was sent to Paris to study theology, but applied himself to medicine, and took his degree at Rheims in 1741. He began practice in his native place, but Buffon, then in charge of the *jardin des plantes*, and whom he had known from childhood, invited Daubenton to assist him in his work on natural history. He was made demonstrator and keeper of the cabinet of natural history in 1745, and contributed the most valuable details to the three volumes of the *Histoire naturelle* which Buffon issued in 1749. He was engaged upon the work altogether 25 years, modestly taking a secondary place, but by his prudence and accurate observation giving great value to the first 15 volumes of their joint work. He described 182 species of quadrupeds, of which 58 had never before been dissected, and 13 not previously described; there are also external descriptions of 26 species, of which five were before unknown. This clear arrangement and description, with the multitude of new facts of internal structure, was the first considerable attempt in France to place comparative anatomy upon a basis of observation, and gave great fame to the authors; but Buffon was finally induced to dispense with the help of his associate, and in his 8vo edition he cut out the anatomical details and descriptions, to the injury of the work. Daubenton had meanwhile built up the cabinets of natural history, increased the number of specimens a hundred fold, arranged and named them, discovered and perfected processes for preserving organic matters, and mounted many birds and quadrupeds. He applied the science of comparative anatomy to the determination of fossils, and in 1762 declared that a bone which had been supposed to be that of the leg of a giant was the radius of a giraffe, a judgment which was confirmed 30 years after by a skeleton sent to the museum of Paris. He pointed out in 1764 the essential differences between the construction of man and the orang-outang. He made also important discoveries in conchology, and contributed greatly to the sciences of vegetable physiology, mineralogy, and agriculture; while he did much to promote cultivation of a superior breed of sheep, and the production of wool. At his suggestion a chair of practical medicine in the collége de France was changed to one of natural history, and in 1778 he was appointed to fill it. In 1783 he lectured on rural economy in the veterinary college of Alfort. He contributed many articles to the *Encyclopédie* of Diderot and to the *Encyclopédie méthodique*, and was also engaged in editing the *Journal des Savants*. He obtained from the convention the conversion of the cabinets of the *jardin des plantes* into a special school of natural history, in which he was appointed professor of mineralogy, a position which he held until his death, keeping up with the progress of science, and at the age of

80 delighting to explain to his classes the brilliant discoveries of Haüy, his former pupil. He was chosen a member of the senate in 1799, and undertook to perform the duties of the office; but the change in the simple routine of his life at his advanced age, and exposure at a rigorous season, brought on apoplexy, and on his first meeting with the senate he fell senseless into the arms of his colleagues, and soon expired. He was buried in the *jardin des plantes*, which he may almost be said to have created. He left besides the works already mentioned many important essays which are preserved in the *Mémoires* of the academy of sciences (1750–'85), royal medical society (1777–'83), &c. He published also in book form *Instructions pour les bergers et les propriétaires de troupeaux* (Paris, 1782), *Tableau méthodique des minéraux* (1784), and *Mémoire sur les indigestions* (1785). His *Catéchisme des bergers* (1810) appeared posthumously.—His wife, MARGUERITE, who was also his cousin, was the author of several romances, of which the most notable and successful was *Zélie dans le désert* (1787). She died in Paris in 1818, at the age of 98.

DAUBENY, Charles Giles Bridle, an English natural philosopher, born at Stratton, Gloucestershire, Feb. 11, 1795, died Dec. 13, 1867. He studied medicine at Edinburgh, and was professor of chemistry at Oxford from 1822 to 1855, and of botany from 1834. He travelled in the United States in 1837–'8, and directed his observations particularly to mineral springs, of which, and of the geology of North America, he published accounts in the papers of the Ashmolean society and of the British association in 1838. He was president of the British association in 1856. He published a "Description of Volcanoes" (1826 and 1848), "Introduction to the Atomic Theory" (1831 and 1850), and "Lectures on Climate" (1863). His papers on the volcanoes of Italy, and the extinct volcanoes of central France, possess great geological interest. He proposed the theory that the bases of the earths exist in a metallic state, and by their oxidation give rise to volcanic fires. He also wrote on the chemical actions exhibited in the growth of plants.

D'AUBIGNÉ. See MERLE D'AUBIGNÉ.

DAUBIGNY, Charles F. See supplement.

DAUDIN, François Marie, a French naturalist, born in Paris about 1774, died in 1804. He was lamed in childhood, and gave himself to study. He published a number of works and essays, of which the most extensive is the *Histoire naturelle des reptiles* (8 vols. 8vo, 1802–'4), designed as a sequel to Buffon's work. His wife assisted him in the preparation of his works, for which she drew the illustrations. She died of consumption, and he followed her within a few days.

DAULIS, a city of ancient Greece, in Phocis, near the confines of Bœotia, destroyed by the Persians under Xerxes, rebuilt and again destroyed by Philip of Macedon; but it was once more rebuilt, and is mentioned in later times as a town almost impregnable because of its position on the summit of a lofty hill. Daulis is famous in mythology as the scene of the tragic events contained in the myths of Tereus, Procne, and Philomela. Its ruins are still to be seen above the modern village of Davlia.

DAUMAS, Melchior Joseph Eugène, a French soldier and author, born Sept. 4, 1803, died near Bordeaux in May, 1871. He entered the army as a volunteer in 1822, but was appointed a sub-lieutenant in 1827. In 1835 he was sent to Algeria, where he served in the campaigns of Mascara and Tlemcen, applied himself to the study of Arabic, and became noted for his acquaintance with the customs of the native population. From 1837 to 1839 he was consul at Mascara, the residence of the emir Abd-el-Kader. Gen. Lamoricière gave him the control of native affairs in his department, and two years later he was placed at the head of the administration of Algeria, and the present constitution of the government is largely due to his arrangement. In 1849 he commanded an expedition against the revolted tribes. In 1850 he was appointed director of Algerian affairs in the ministry of war. He was made a general of division Jan. 14, 1853, and senator Aug. 12, 1857, and retired from active duty in the army in 1868. Among his works are: *Exposé de l'état actuel de la société arabe*, &c. (Algiers, 1845); *Le grand désert*, published with A. de Chancel (Paris, 1845; new ed., 1861); *La Grande Kabylie* (1847); *Mœurs et coutumes de l'Algérie* (1853); and *Les chevaux du Sahara*, and *Principes généraux du cavalier arabe* (1855).

DAUN, Leopold Joseph Maria, count, generalissimo of the imperial troops in the seven years' war, born in Vienna, Sept. 25, 1705, died Feb. 5, 1766. He took a distinguished part in the war against the Turks, 1737–'9, and in the Silesian wars, 1740–'42 and 1744–'5. In the seven years' war he defeated Frederick the Great in the battles of Kolin (1757) and Hochkirch (1758), and captured in Saxony Frederick's general Fink, with 11,000 Prussians (1759). Laudon lost the battle of Liegnitz in 1760, because Daun failed to relieve him; and Daun lost the battle of Torgau, the same year, after having won it in the daytime, by Ziethen's cavalry attack at night, and was himself wounded. At the close of the war in 1763 he retired to private life.

DAUNOU, Pierre Claude François, a French scholar and politician, born at Boulogne-sur-Mer, Aug. 18, 1761, died in Paris, June 20, 1840. In 1792, being a member of the national convention, he denied its right to try Louis XVI., and voted for his detention only. He signed the protest against the proceedings of May 31, 1793, which doomed the Girondists to their fate, and was in consequence arrested. He resumed his seat after the 9th Thermidor, and entered the council of 500, of which he was the first president. In 1797 he went to

Italy, where in the following year he participated in the organization of the Roman republic. Reëlected to the council of 500, he was one of the committee appointed to prepare the new constitution of the year VIII. He became under it a member of the tribunate, but his independence caused him to be ejected from that body in 1802. He then devoted himself to letters, and in 1804 was appointed keeper of the archives of the legislative body, and in 1807 of those of France. This office was taken from him in 1815, but restored in 1830. In 1819 he was made professor of history and morals in the collége de France, and elected to the chamber of deputies, and became a peer in 1839. Among his works are a continuation of Rulhière's *Histoire de l'anarchie de Pologne* (1807), *Essai historique sur la puissance temporelle des papes* (4th ed., 1818), and *Cours d'études historiques* (20 vols. 8vo, 1842–'9).

DAUPHIN, the title given to the eldest son of the king of France under the Valois and Bourbon dynasties. The official designation was: "By the grace of God, eldest son of the king of France, and dauphin of Viennois." The title originally belonged to the counts of Dauphiny, one of whom is said to have gained it from the device of a dolphin on his helmet. (See Dauphiny.) The last dauphin was Louis Antoine, duke d'Angoulême, who took the title on the accession of his father Charles X., after whose abdication in 1830 he also abdicated in favor of his nephew the duke de Bordeaux.

DAUPHIN, a S. E. county of Pennsylvania, bounded W. and S. W. by the Susquehanna river, and drained by many small streams; area, 530 sq. m.; pop. in 1870, 60,740. The Kittatinny or Blue mountain crosses the middle of the county, and several parallel ridges extend on each side of it, while South mountain runs along the S. border. Between these ranges are fertile valleys, those of the south being of limestone formation and especially fruitful. The N. part is rich in anthracite coal, and iron ore is also found. The Susquehanna canal passes along the W. border, and the county is crossed by the Union canal, and by the Pennsylvania Central, the Northern Central, the East Pennsylvania and Lebanon Valley, the Schuylkill and Susquehanna, and the Cumberland Valley railroads. The chief productions in 1870 were 422,637 bushels of wheat, 56,527 of rye, 714,886 of Indian corn, 727,535 of oats, 210,659 of potatoes, 45,672 tons of hay, 766,126 lbs. of butter, and 44,303 of tobacco. There were 7,002 horses, 10,298 milch cows, 10,371 other cattle, 4,462 sheep, and 19,239 swine; 4 manufactories of cars, 15 of carriages and wagons, 2 of cotton goods, 16 of furniture, 24 of iron in various forms, 1 of nails and spikes, 14 of machinery, 4 of engines and boilers, 2 of Bessemer steel, 14 of bricks, 29 of lime, 1 of malt, 1 bookbindery, 17 tanneries, 7 currying establishments, 32 grist mills, 5 saw mills, 18 planing mills, and 3 distilleries. Capital, Harrisburg.

DAUPHINY (Fr. *le Dauphiné*, the dauphinate, *i. e.*, of Vienne), an ancient province in the S. E. of France, bounded N. by Burgundy, E. by Savoy and Piedmont, S. by Provence, and W. by Languedoc and Lyonnais, from which it is separated by the Rhône. It is divided naturally into upper and lower Dauphiny, portions respectively adjoining the Alps and the Rhône. The surface of the eastern parts is broken by outliers of the Alps. The climate is cold from the nearness of the mountains, but healthful, and the country produces grain, wine, olives, hemp, and silk. The province now constitutes the departments of Isère, Hautes-Alpes, and Drôme.—The country was anciently occupied by the Allobroges, who were subjugated by the Romans A. D. 61. At the fall of the empire it came under the rule of the Burgundians, whose king lived at Vienne. After the destruction of the kingdom of Burgundy by the Franks (534), they held the country until the death of Louis II. (879). Then Boso, duke of Lombardy and Provence, proclaimed himself king, and was recognized by Charles the Fat. From this time the country was divided among several counts, the most important of whom, the count of Vienne, took the title *dauphin*, from which the province came to be named. Subsequently Dauphiny came into possession of the house of Burgundy, and later of that of Tour-du-Pin. In 1343 Humbert II., last dauphin of Vienne, being without issue, made Philip of Orleans, younger son of Philip of Valois, his heir, in consideration of 120,000 florins of gold; and in 1349 he put in possession the grandson of Philip of Valois, afterward King Charles V., himself retiring to a monastery. This cession was confirmed in 1378 by the emperor Charles IV., on whom Dauphiny depended as a fief of the German empire. Dauphiny was governed from this time as a separate province by the king's eldest son till 1457, when it was incorporated with the kingdom, Grenoble becoming the capital. The eldest sons of the king, however, continued to bear the title of dauphin. (See Dauphin.) The people of Dauphiny early received the religious views of the Vaudois, and in the 16th century the doctrines of the reformers, and suffered most cruel persecutions. In 1692 the duke of Savoy and Prince Eugene laid waste the province with fire and sword. The Dauphinese were quick to join the revolution, and also to welcome Napoleon on his return from Elba. The boundary between the province and Piedmont was fixed by treaty March 24, 1760.

DAVENANT, or **D'Avenant. I.** Sir **William,** an English dramatist, born at Oxford in February, 1605, died in April, 1668. Shakespeare on his journeys from London to Stratford often stopped at the inn kept by the father of Davenant, and took considerable notice of the boy, who while still a child wrote an ode to his memory. Leaving college without a degree, he became page to the duchess of Richmond, and afterward to Lord Brooke, who encouraged

his literary talents. About 1628 he began to be known by his masques, which the nobility of both sexes played at court. In 1637, on the death of Ben Jonson, he was appointed poet laureate. During the civil wars he adhered to the royal cause, and was arrested as a royalist in 1641, but effected his escape to France, where he became a Roman Catholic. Returning to England with forces for the relief of the king, he was knighted at the siege of Gloucester in 1643. In 1651 he undertook to convey a colony of French artisans to Virginia; but his ship was captured by a parliamentary cruiser, and he was imprisoned in the tower. His life was saved, it is said, by the intercession of Milton, and after two years he was released. He now tried to introduce a modification of the drama suited to the moral views of the time, and his "entertainments" are considered by some to be the beginning of the representation of operas in England. At the restoration he formed a new company of comedians, and as manager of the court theatre of Charles II. introduced from France many improvements in theatrical representation. His works consist of dramas, of which the best is "The Siege of Rhodes," masques, an unfinished epic called "Gondibert," and fugitive verses. They were published by his widow in 1673. On his tomb in Westminster abbey is inscribed, in imitation of Jonson's epitaph, "O rare Sir William Davenant." In his own day it was currently reported that he was the natural son of Shakespeare, and he encouraged the impression himself. The chief foundation of the story seems to have been his strong personal resemblance to the great dramatist. **II. Charles,** an English political writer, son of the preceding, born in 1656, died Nov. 14, 1714. He graduated as doctor of civil law at Oxford, and was a member of parliament in 1685, 1698, and 1700. In 1685 he was appointed inspector of plays, in conjunction with the master of the revels, and from 1703 to the time of his death he officiated as inspector general of exports and imports. In his youth he composed a tragedy, called "Circe," in which he himself acted. A selection of his political and commercial works was published by Sir Charles Whitworth (5 vols. 8vo, London, 1771).

DAVENPORT, a city of Iowa, capital of Scott county, on the right bank of the Mississippi, just below the upper rapids, opposite Rock Island, Ill., about 200 m. N. by W. of St. Louis, and 160 m. W. by S. of Chicago. It is built at the foot and along the slope and summit of a bluff 3½ m. long, rising gradually from the river, and enclosed on the land side by an amphitheatre of hills half a mile in the rear. The back country is a rich farming region, and abounds in bituminous coal. The city presents the aspect of a prosperous commercial and manufacturing mart. It is regularly laid out, and besides the county buildings contains many imposing edifices, including the city hall and one of the finest opera houses in the west. The population in 1840 was 600; in 1850, 1,848; in 1860, 11,267; in 1870, 20,038, of whom 8,301 were foreign. The Chicago, Rock Island, and Pacific, and the Davenport and St. Paul railroads pass through the city. The old bridge connecting Davenport with Rock Island has recently been replaced by one of wrought iron, resting on massive piers of stone, which, besides a rail track, has accommodations for carriages and foot passengers, and was built partly by the United States and partly by the Chicago, Rock Island, and Pacific railroad company, at a cost of $1,000,000. There are several miles of street railroad. Davenport has immense water power, and is the great grain depot of the upper Mississippi. The following statistics are for the six months ending Dec. 31, 1872: Receipts by rail and wagon, 955,767 bushels of wheat, 1,441,962 of barley, 370,482 of oats, 12,480 of rye, 336,116 of Indian corn, 333,882 of potatoes, 119,480 of onions, 5,000 tons of hay, 210 of straw, 2,700 of anthracite and 38,040 of bituminous coal, and 150 of coke; shipped by rail, 2,414 cattle, 210 sheep, 7,800 swine, and 500 horses. Among the leading manufactures were: lumber, $637,318; agricultural implements, $347,000; carriages and wagons, $152,650; sashes, doors, and blinds, $282,743; furniture, $186,787; woollen goods, $93,000; bags and wrapping paper, $100,000; ale and beer, $160,820; cigars and tobacco, $245,551; flour, 128,000 bbls.; corn meal, 14,400 bbls.; coke, 1,000 tons. There were slaughtered 5,121 cattle, 4,371 calves, 3,656 sheep, and 10,000 swine. The hides and pelts bought and shipped were valued at $100,000. There are several manufactories of saddlery and harness, machine shops, and brass and iron founderies; also three national banks, two savings banks, and three insurance companies. The city is governed by a mayor and a board of 12 aldermen. There are seven grammar school houses. The number of separate schools in 1871 was 54 (including a high, a normal, and an evening school), having 75 teachers, and an average attendance of about 2,500 pupils. The expenditure for school purposes was $132,244 92, of which $37,318 13 was for teachers' wages. The academy of the Immaculate Conception (Roman Catholic) had 12 instructors and 150 pupils. Griswold college (Episcopal), established in 1859, which has a theological department, had 7 instructors, 117 students, and a library of 4,000 volumes. Iowa college, originally established here, has been removed to Grinnell, Poweshiek co. The library association has about 3,000 volumes. Four daily newspapers (two German), five weekly (two German), and a monthly periodical are published. The city contains an academy of natural sciences, two medical societies, and a branch of the Iowa soldiers' home. There are 25 churches, viz.: 2 Baptist (1 German), 1 Christian, 2 Congregational (1 German), 3 Episcopal, 1 Jewish, 2 Lutheran (German), 6

Methodist (1 German and 1 colored), 2 Presbyterian, 1 Reformed, 4 Roman Catholic (1 German), and 1 Unitarian.—Davenport was laid out in 1836, and became a city in 1851.

DAVENPORT, family. See supplement.

DAVENPORT, John, first minister at New Haven, Conn., born in Coventry, England, in 1598, died in Boston, Mass., March 15, 1670. He was educated at Oxford, and became an eminent preacher among the Puritans in London, and minister of St. Stephen's church. About 1630 he was engaged in purchasing the church lands in the hands of laymen, for the benefit of poor congregations; and great progress was already made in the execution of the plan, when it was interrupted by Bishop Laud, who feared it would turn to the profit of the nonconformists. Davenport soon became a nonconformist himself, was obliged to resign his charge, and retired to Holland in 1633. There he became involved in a controversy, taking sides against the general baptism of children, and in about two years returned to London. He had been concerned in the patent of the Massachusetts colony, and seeing a favorable account of it in a letter from Mr. Cotton, he went to Boston, arriving there June 26, 1637. He was invited to sit with the synod then in session, but was deterred by the sharp religious controversies of Massachusetts from settling there, and on March 30, 1638, sailed with a company for Quinnipiack to found a new colony, which was called New Haven. The first Sabbath after the arrival he preached under an oak. He was minister in New Haven for 30 years, and was active in the organization of the civil government. The Bible was made the basis of the civil law, and as trial by jury is not mentioned in the Bible, no place was given it in the state. The constituent assembly, held in a barn, June 4, 1639, resolved that church members only should be burgesses. The carefulness of Davenport in regard to the admission of members to the church gave him also the keys of political power. Such was his reputation abroad, that he was invited, with Hooker and Cotton, to sit with the Westminster assembly of divines, but he could not be spared from his church. When the regicides Goffe and Whalley were flying from pursuit, he hid them in his house, and exhorted his people from the pulpit not to betray them. About 1662 a sharp discussion arose in New England in regard to the general baptism of children. Davenport took the same ground he had taken in Amsterdam. He succeeded Wilson as pastor in Boston, Dec. 9, 1668. Some who disapproved of his controversial position left the church when he came, and united to form the church afterward known as the Old South.

D'AVEZAC, Auguste Geneviève Valentin, an American lawyer, born in Santo Domingo, died in 1850. He was educated in France, fled with his family to the United States from the negro insurrections in his native island, studied medicine in North Carolina, settled as a practising physician in Virginia, and afterward, at the suggestion of his brother-in-law Edward Livingston, studied law and rose to distinction in New Orleans. In the war of 1812 he acted as judge advocate and aid to Gen. Jackson, and in 1831 he was appointed by President Jackson chargé d'affaires at the court of the Netherlands. He subsequently changed his residence to the city of New York, and again, during the administration of President Polk, was chargé d'affaires at the Hague.

DAVID, the second king of Israel, youngest son of Jesse, born in Bethlehem in Judah about 1085 B. C., died in Jerusalem about 1015. He was still tending the flocks of his father when he was chosen by the prophet Samuel as the future king. He was even then remarkable for beauty, valor, and musical skill, and was early brought to the court of Saul to soothe the melancholy of the king by his harp. Subsequently he challenged and slew the Philistine giant Goliath, and won the friendship of Saul's son Jonathan, the love of his daughter Michal, and the admiration of the people; but drew upon himself the jealousy, and finally the fury of the unhappy king, who repeatedly attempted to kill him. To this end he tempted him to services of extreme danger, by promising him his daughter in marriage as a reward; but David's success made him the king's son-in-law. Saul afterward openly tried to slay him, and he escaped only by the devotion of his wife and her brother, and the favor of Samuel and the priests. Learning from Jonathan that the king was resolved upon his death, he fled to the Philistines, and, not finding safety there, feigned madness, and adopted a life of outlawry in the fastnesses of southern Judah. Here he gathered a band of followers, and committing his aged parents to the king of Moab, on whom they had the claim that Jesse was the grandson of Ruth the Moabitess, he baffled every attempt of Saul to capture him, and even twice found opportunity of revenge, which he declined to take. He returned at length to Philistia as chief of a powerful band, and remained until the death of Saul and Jonathan at the battle of Gilboa (about 1055). He was now acknowledged as king by his own tribe, and made Hebron his residence. Abner, the general of Saul, proclaimed Ishbosheth, the son of Saul, as the legal successor to the throne; but after seven years, finding David's power continually growing, he intrigued in favor of David. Abner was assassinated by Joab, and soon afterward Ishbosheth was assassinated by two obscure persons, and David, after having reigned in Hebron seven years, was acknowledged king by the whole nation. He now conquered the remnant of the heathen in the land, enlarged its border from the Euphrates to the Mediterranean, and from Damascus to the Arabian gulf, and established the military power of the kingdom. Having wrested Zion from the Jebusites, he fixed there his capital. The priests had suffered greatly because of

their friendship for him during the reign of Saul, and he devoted himself now to perfecting the public worship. He brought the ark of God to Jerusalem, and organized the service of sacred song, surrounding himself with prophets and psalmists. He intended building a temple, but was forbidden by the prophet Nathan because of the blood he had shed in war. The same prophet reprimanded him on account of the murder of Uriah, whose wife Bathsheba, taken by the king, subsequently became the mother of Solomon. David's old age was embittered by the consequences of polygamic disorder in his house, and the passions and ambition of his sons, and by revolts, conspiracies, and a dreadful pestilence. His son Absalom brought about an almost general insurrection, but was conquered and slain by Joab. Sheba, a Benjamite, raised the standard of rebellion, but was subdued by Amasa, the successor of Joab in command. A conspiracy of Adonijah, another son, was baffled by the proclamation of Solomon as heir and king. Shortly afterward the aged monarch died, having reigned over all Israel 33 years.—David founded the permanent dynasty of Hebrew kings. How many of the psalms he wrote is uncertain (see PSALMS); but his lament over Saul and Jonathan alone proves him a poet of great beauty of thought and of rare power. Though a man of strong passions, often ungoverned, he yet shines in Scripture as the model king of Israel.

DAVID II. See BRUCE.

DAVID, Félicien César, a French composer, born at Cadenet, in Vaucluse, April 3, 1810, died Aug. 30, 1876. He sang in the cathedral at Aix, and at the age of 20 entered the conservatory in Paris. Having joined the St. Simonians, he composed the music of the choruses sung in their establishment at Ménilmontant, and with some of them, on the dissolution of the sect, he travelled in Egypt and the East. He returned in 1835, and published *Mélodies orientales.* His reputation rests mainly on the *Désert*, a choral symphony, published in 1844, which aims at giving impressions of the physical aspects of the East, and abounds in melodic and harmonic beauties. He wrote a number of operas, among which are *Moïse sur le Sinaï* (1846), *Christophe Colomb* (1848), *La perle du Brésil* (comic opera, 1851), *Herculanum* (1859), and *Lalla Roukh* (comic opera, 1862). In 1869 he succeeded Berlioz as librarian of the conservatory and as member of the institute.

DAVID, Ferdinand, a German musician, born in Hamburg, Jan. 19, 1810, died in July, 1873. At 13 he commenced the study of the violin under Spohr, and two years later made a musical tour with his sister, afterward known as the pianist Louise Dulcken, playing successfully at Dresden, Leipsic, Berlin, and Copenhagen. In 1826 he was appointed first violinist at the theatre royal, Berlin. In 1829 he went in the same capacity to Dorpat, where he also conducted a musical society, and became known as an able orchestral leader. He made a tour through Russia, and in 1836 became concert master under Mendelssohn at Leipsic. On the formation of the Leipsic conservatory he became a teacher there, and sent out many remarkable young violinists. During the intervals of teaching he visited many capitals, and took rank with the first musicians. He has written concertos, romances, melodies, symphonies, and a comic opera, *Hans Wacht.*

DAVID, Jacques Louis, a French painter, born in Paris, Aug. 31, 1748, died in Brussels, Dec. 29, 1825. His taste for painting was fostered by his uncle Buron, the architect, and developed in the studio of the historical painter Vien. David, having obtained in 1775 the great prize for one of his paintings, followed his master to Rome, and there imbibed that love for classic art which afterward caused him to be hailed in France as the great reformer of painting. His first important work, the "Plague of St. Roch" (1779), was executed at Rome for the lazaretto of Marseilles. This was followed, after his return to Paris in 1780, by "Belisarius" and "Andromache lamenting the Death of Hector." In 1784 he revisited Rome, and there finished the "Horatii," which was greeted with enthusiasm in Italy and France. In 1787 he produced the "Death of Socrates;" in 1788, the "Loves of Paris and Helen;" and in 1789, his famous "Brutus," which had been ordered by Louis XVI. as a pendant to the "Horatii." Revolutionist and painter at the same time, he executed in 1790 for the constituent assembly the "Oath of the Tennis Court" and the "Entry of Louis XVI. into the Assembly," and in 1793 painted the assassination of Lepelletier and of Marat. He was also consulted in reference to the arrangement of festivals and the costumes of civil and military officers, fixing his classic ideas upon dress and manners. In 1793, being a member of the convention, he voted for the death of the king. Imprisoned after the downfall of Robespierre, he was released after four months, through the intercession of his pupils, but soon rearrested and detained until the amnesty of October, 1795. While in prison he commenced his celebrated picture of the "Sabines," which he finished in 1799. He executed for Napoleon a series of works of which the "Coronation" and the "Distribution of Eagles" pleased the emperor best; while the picture in which Bonaparte is represented upon an impetuous horse, on Mount St. Bernard, pointing out to his soldiers the path to Italy, was the most popular. Expelled from France soon after Napoleon's downfall, he went to Brussels, but before his departure gave proof of his patriotism by refusing to execute the portrait of the duke of Wellington. At Brussels he produced "Cupid and Psyche," the "Farewell of Telemachus and Eucharis," the "Wrath of Achilles," and "Mars disarmed by Venus," which were exhibited all over Belgium for charitable purposes; while a copy of his "Coronation of Napoleon," also executed by him at Brussels,

made a successful tour through Great Britain and the United States. In his later pictures we find the classic rigidity of his previous works softened by a great infusion of sentiment. He painted some excellent portraits, among which his heads of Marat and Pius VII. are most remarkable. Girodet, Gros, Gérard, Drouais, Ingres, Isabey, David d'Angers, and many others who became eminent artists, were among his pupils, and disciples of the new school which he inaugurated. His body was buried at Ste. Gudule in Brussels, and his heart in Père-la-Chaise, where his family have erected a monument to his memory.

DAVID, Pierre Jean, a French sculptor, commonly called David d'Angers, born in Angers, March 12, 1789, died in Paris, Jan. 4, 1856. He was not a relative of the famous painter of his name, although he was his pupil and married his niece. When only 20 years old he obtained a medal of encouragement from the academy of fine arts, and in 1811 his bass-relief of Epaminondas, which is in the museum of his native town, gained the first prize for sculpture, and along with it a pension to finish his education in Italy. He passed five years at Rome; then visited London, where, although in indigence, he refused to execute a monument commemorative of Waterloo; and on his return to Paris he established his reputation by his statue of Condé. He was elected a member of the academy of fine arts Aug. 5, 1826, and appointed professor Dec. 6, 1826. From 1835 to 1837 he was employed upon his sculptures of the Pantheon, now the church of St. Geneviève, at Paris, which constituted the great work of his life. His other productions embrace bass-reliefs, colossal medallions, busts, statues, and funereal monuments. Among the first are the "Battle of Fleurus" and the "Battle of Heliopolis" for the arch at Marseilles, and the "Epaminondas," which was the beginning of his reputation. Among the busts are those of Washington and Lafayette in the capitol at Washington, of Chateaubriand, Lamartine, Rossini, and Béranger at Paris, of Goethe at Weimar, and of Humboldt at Berlin. The mausoleum of Marco Bozzaris, at Missolonghi, presented by him in sympathy with the Greek struggle for independence, is one among several tombs of great beauty which he produced. His last work, the statue of Bichat, was placed in the great court of the medical school at Paris, July 16, 1857. He was a republican member of the constituent assembly of 1848, and was proscribed after the *coup d'état*. He took refuge at Brussels, and was not permitted to return to France until after nearly three years, during which he visited Greece. David excelled more by his immense capacity for labor than by originality.

DAVIDSON. I. A W. central county of North Carolina; area, 630 sq. m.; pop. in 1870, 17,414, of whom 3,546 were colored. The Yadkin river traverses its W. border, and several smaller streams intersect it. The surface is diversified by hills and valleys, and nearly all of the land is fertile. Gold has been found in the S. part, and there is a mine of silver and lead, and one of copper. The North Carolina railroad passes through the county. The chief productions in 1870 were 152,726 bushels of wheat, 287,355, of Indian corn, 120,459 of oats, 6,904 tons of hay, 29,262 lbs. of wool, 38,937 of tobacco, and 100 bales of cotton. There were 2,859 horses, 3,702 milch cows, 5,338 other cattle, 13,440 sheep, and 19,461 swine; 7 grist mills, 4 manufactories of boots and shoes, and 1 zinc-smelting establishment. Capital, Lexington. **II.** A N. county of Tennessee, intersected by Cumberland river; area, 750 sq. m.; pop. in 1870, 62,897, of whom 25,412 were colored. The surface is slightly uneven; the soil is good and well watered, and agriculture flourishes. Excellent limestone is found here. The Cumberland river in this part of its course is navigable for steamboats, and six good turnpike roads meet in this county. The Nashville and Chattanooga, Nashville and Decatur, Nashville and Northwestern, Louisville and Nashville, and Edgefield and Kentucky railroads traverse it. The chief productions in 1870 were 87,166 bushels of wheat, 832,982 of Indian corn, 131,550 of oats, 24,858 of barley, 66,243 of Irish and 62,854 of sweet potatoes, 192,556 lbs. of butter, and 1,416 bales of cotton. There were 5,646 horses, 2,228 mules and asses, 5,428 milch cows, 7,041 other cattle, 12,221 sheep, and 29,667 swine; 15 manufactories of carriages and wagons, 5 of furniture, 6 of iron castings, 11 of machinery, 1 of cotton-seed oil, 6 of patent medicines, 3 of sashes, doors, and blinds, 12 of tin, copper, and sheet-iron ware, 7 of bricks, 6 of brooms, 5 of confectionery, 13 of saddlery and harness, 1 of wooden ware, 4 book binderies, 6 grist mills, 4 tanneries, 6 currying establishments, 2 distilleries, 2 breweries, 4 saw mills, and 16 planing mills. Capital, Nashville, which is also the capital of the state. **III.** A S. E. county of Dakota territory, recently formed and not included in the census of 1870; area, 432 sq. m. It is intersected by the Dakota or James river.

DAVIDSON. I. Lucretia Maria, an American poetess, born at Plattsburgh, N. Y., Sept. 27, 1808, died Aug. 27, 1825. She wrote verses at four years of age, having learned in secrecy to copy the letters from printed books. The earliest of her productions which are preserved were written when she was nine years old. At 16 she was sent to school in Troy, where her application soon undermined her health; but she was allowed to continue her studies, even when under medical treatment. This induced a hectic consumption, which soon proved fatal. A great part of her compositions were destroyed, but 278 pieces remain, some of which were published in 1829, under the title of "Amir Khan and other Poems," with a memoir by Mr. S. F. B. Morse, afterward republished with a life by Miss Sedgwick. A new edition of her poems, with illustrations by

Darley, edited by her brother, M. O. Davidson, was published in New York in 1871. **II. Margaret Miller,** sister of the preceding, born March 26, 1823, died Nov. 25, 1838. She had the same sensibility and precocity, and began to write at six years of age. At ten she wrote and acted in a passionate drama in society at New York. Her poems were introduced to the world under the auspices of Washington Irving, and the works of the sisters were published together in 1850.

DAVIDSON COLLEGE, a post village of Mecklenburg co., N. C., and the seat of Davidson college, an institution founded in 1837 by the Presbyterians. In 1872 it had 7 instructors, 105 students, and a library of 6,000 volumes.

DAVIE, a W. central county of North Carolina; area, about 250 sq. m.; pop. in 1870, 9,620, of whom 3,093 were colored. It has a rough, hilly surface. Yadkin river and Hunting creek are the principal streams. The chief productions in 1870 were 47,866 bushels of wheat, 186,821 of Indian corn, 59,721 of oats, and 247,555 lbs. of tobacco. The value of live stock was $135,922. Capital, Mocksville.

DAVIES, Charles, an American mathematician, born at Washington, Litchfield co., Conn., Jan. 22, 1798, died at Fishkill Landing, N. Y., Sept. 17, 1876. He entered the military academy at West Point in 1813, graduated in 1815, and was made lieutenant of artillery. He was soon transferred to the corps of engineers, and appointed a teacher in the academy in August, 1816. In December of the same year he resigned his commission and accepted the appointment of assistant professor of mathematics, and in 1821 of natural philosophy; and in 1823 he was commissioned professor of mathematics. While engaged in preparing a series of mathematical text books his health failed, and he resigned his post and in 1837 visited Europe. After his return he became professor of mathematics in Trinity college, Hartford; but in consequence of a bronchial affection he relinquished this post for that of paymaster in the army and treasurer of West Point academy. These offices he resigned in 1845, and became professor of mathematics and natural philosophy in the university of New York. He afterward retired to Fishkill Landing, on the Hudson, to complete his series of text books, but soon resumed his professional duties, first in the normal school at Albany, and afterward in Columbia college, New York, of which institution he was at his death emeritus professor of higher mathematics. His works, considered as a series, present a natural order of sequence, extending from a primary arithmetic to the higher mathematics, and including editions of Bourdon's "Algebra" and Legendre's "Geometry." He also published treatises on surveying and trigonometry, a work on the "Logic of Mathematics," and a "Mathematical Dictionary and Cyclopædia of Mathematical Science," written in conjunction with Prof. W. G. Peck of Columbia college.

DAVIES, Sir **John,** an English lawyer and poet, born at Tisbury, Wiltshire, in 1570, died in 1626. He studied at Oxford and at the Middle Temple, from which he was expelled for his unruly temper, and during his exclusion wrote most of his poems. In the reign of James I. he was attorney general and speaker of the commons in Ireland; he afterward sat in the English parliament, and at the time of his death had just been made lord chief justice. His principal work is a didactic poem entitled *Nosce Teipsum*, or "The Soul of Man, and the Immortality thereof" (London, 1599), which is remarkable for its condensation of thought and precision of style.

DAVIES, Samuel, D. D., an American divine, born in New Castle co., Del., Nov. 3, 1724, died at Princeton, N. J., Feb. 4, 1761. He received a careful religious education, studied the classics, sciences, and theology, and was licensed to preach in 1746. Ordained in the next year, he was appointed to officiate at different places of worship in Hanover co., Va. His labors were highly successful, and led to a controversy between him and the king's attorney general as to whether the act of toleration, passed in England for the relief of Protestant dissenters, extended also to Virginia. The ultimate decision was in the affirmative. In 1753 he was sent with Gilbert Tennent to England to solicit funds for the college of New Jersey; he was received with favor as a preacher in England and Scotland, and was successful in the object of his mission. He resumed his pastoral labors on his return, amid the excitement of the French and Indian war, and after the defeat of Braddock preached a sermon, which was published, in a note to which occurs the passage: "... that heroic youth, Col. Washington, whom I cannot but hope Providence has hitherto preserved in so signal a manner for some important service to his country." The first presbytery in Virginia was established through his exertions in 1755; and in 1759 he succeeded Jonathan Edwards as president of the college of New Jersey. A collection of his sermons was published in London in 1767 (5 vols.), and republished several times in England and America. An edition in 3 vols. was published in New York in 1851, with an essay on his life and times by the Rev. Albert Barnes.

DAVIESS. I. A N. W. county of Kentucky, separated from Indiana by the Ohio river, and bounded W. by Green river; area, about 400 sq. m.; pop. in 1870, 20,714, of whom 3,603 were colored. The surface is level and the soil generally good. Coal is found in large quantities. The chief productions in 1870 were 68,681 bushels of wheat, 1,085,492 of Indian corn, 65,394 of oats, 4,727 tons of hay, 173,244 lbs. of butter, and 6,273,067 of tobacco. There were 5,184 horses, 3,363 milch cows, 4,457 other cattle, 12,368 sheep, and 24,216 swine; 9 distilleries, 11 saw mills, 3 grist mills, 7 manufactories of barrels, and 3 of tobacco and snuff. Capital, Owenborough. **II.** A S.

W. county of Indiana, between the E. and W. forks of White river, which unite at its S. W. angle; area, 423 sq. m.; pop. in 1870, 16,747. The greater part of the land is level or rolling, and fertile. There are large beds of bituminous coal in the county. The Wabash and Erie canal and the Ohio and Mississippi railroad traverse it. The chief productions in 1870 were 251,923 bushels of wheat, 702,642 of Indian corn, 98,530 of oats, 39,895 of potatoes, 9,648 tons of hay, 208,468 lbs. of butter, 63,382 of wool, and 39,830 of tobacco. There were 5,969 horses, 4,122 milch cows, 7,280 other cattle, 25,205 sheep, and 27,689 swine; 3 grist mills, 11 saw mills, 12 manufactories of carriages and wagons, 5 of saddlery and harness, and 2 of woollen goods. Capital, Washington.

III. A N. W. county of Missouri, intersected by Grand river; area, 576 sq. m.; pop. in 1870, 14,410, of whom 324 were colored. The surface is moderately uneven and most of the soil fertile. The chief productions in 1870 were 85,362 bushels of wheat, 624,012 of Indian corn, 244,963 of oats, 47,620 of potatoes, 7,613 tons of hay, 211,787 lbs. of butter, and 64,339 of wool. There were 8,465 horses, 5,831 milch cows, 10,512 other cattle, 25,652 sheep, and 26,228 swine; 2 grist mills, 5 saw mills, and 3 wool-carding and cloth-dressing establishments. Capital, Gallatin.

DAVIESS, Joseph Hamilton (known as Jo Daviess), an American lawyer and soldier, born in Bedford co., Va., in 1774, killed at the battle of Tippecanoe, Nov. 7, 1811. In 1779 his parents emigrated to Kentucky, and settled in Lincoln county, and afterward near Danville. He was educated in an academy at Harrodsburg, where he became a good classical and mathematical scholar, and pursued a wide course of reading. After six months' service as a volunteer against the Indians in 1793, he studied law, and in 1795 settled at Danville and entered on a career which soon made his name a household word in the west. Being a federalist, he was excluded from any hope of political advancement, and devoted himself to his profession. Many stories are told of his eccentricities. Instead of "riding the circuit," he used to shoulder his rifle and range the woods from town to town; and he often appeared in court in a picturesque hunting costume. In 1799 he acted as second to John Rowan in a duel in which Rowan's antagonist was killed. Both principal and seconds fled, to avoid prosecution. Daviess was for some time a fugitive; but finally hearing that Rowan had been arrested, he returned, appeared in court as his counsel, and secured his acquittal. Daviess is said to have been the first western lawyer that ever argued a case in the United States supreme court. He made his appearance in the national capital in a remarkably picturesque and dilapidated costume, gained an important suit, and returned in nearly the same guise. Soon afterward he married a sister of Chief Justice Marshall, and was appointed United States attorney for the district of Kentucky. As such, on Nov. 3, 1806, he moved for an order requiring Aaron Burr to appear and answer to a charge of levying war against a nation with which our government was at peace. The judge overruled the motion; but Burr appeared in court next day, and requested that the motion be granted. This was done, Burr boldly courting investigation, and Henry Clay becoming his counsel. Some of the witnesses upon whom Daviess had relied could not be brought into court, and the prosecution fell through. This affair almost entirely destroyed the popularity of Jo Daviess, which even the subsequent revelation of Burr's plot could not fully restore. In the summer of 1811 he joined the army under Gen. Harrison, for the campaign against the northwestern Indians. In the battle of Tippecanoe, seeing that an exposed angle of the line was likely to give way before a determined assault, he led a cavalry charge against the savages at that point. The manœuvre was completely successful; but Daviess fell, shot through the breast.

DAVILA, Enrico Caterino, an Italian historian, born near Padua, Oct. 30, 1576, murdered near Verona in the summer of 1631. He was the youngest son of Antonio Davila, several of whose ancestors had been constables of Cyprus, from which position the elder Davila was driven impoverished when the island was taken by the Turks. He sought refuge at the court of France in 1572, and Catharine de' Medici took him into favor. He named his young son in honor of the queen and her son Henry III. The boy commenced life as page to Catharine, and at 18 entered the army under Henry IV., and distinguished himself at the sieges of Honfleur and Amiens. Having returned to Italy, he devoted himself to study, and became a member of the society of the Innominati at Padua. A duel with a poet who lampooned him, and whom he ran through the body, caused him to flee to Venice. That republic was then raising troops for one of its frequent wars. Davila enlisted 300 men, and entered the army, holding commands successively in Friuli, Candia, Dalmatia, and elsewhere. He received a pension, as well as restoration to his hereditary rank of constable of Cyprus. Being appointed governor of Crema, he stopped with his family and attendants at the hamlet of San Michele, near Verona, to demand a relay of horses. This was refused by the postmaster, who on being reproved shot Davila dead with an arquebuse. In a general struggle which followed Davila's chaplain was killed, and Davila's son killed the postmaster, whose accomplices were arrested and hanged. Davila is known chiefly for his famous work, the *Istoria delle guerre civili di Francia*, which describes the period from the death of Henry II. in 1559 to the peace of Vervins in 1598. It is a full and trustworthy record of facts, although too favorable to Catharine de' Medici. It was first published by Baglioni (Venice, 1630). The

best editions are those issued from the royal press (folio, Paris, 1644), and by Apostolo Zeno (2 vols. folio, Venice, 1733), the latter with a biography of Davila. It has been translated into many languages. The first English translation was published in 1647, the latest in 1757, in 2 vols. fol. An Italian edition was published at London in 1801, in 8 vols. 8vo.

DAVIS. **I.** A N. E. county of Texas, bounded N. by Sulphur fork of Red river, E. by Arkansas and Louisiana, and watered by John and James creeks; area, 927 sq. m.; pop. in 1870, 8,875, of whom 3,379 were colored. The surface is undulating, and partly occupied by uncultivated swamps. The uplands are fertile. It is heavily timbered with oak, blackjack, ash, hickory, and pine. There are extensive beds of iron ore and copperas springs. The chief productions in 1870 were 256,505 bushels of Indian corn, 36,228 of sweet potatoes, and 5,966 bales of cotton. There were 1,156 horses, 2,584 milch cows, 5,888 other cattle, 3,527 sheep, and 13,126 swine; several saw mills, steam flour mills, and iron founderies. Capital, Linden. **II.** A S. E. county of Iowa, bordering on Missouri; area, about 480 sq. m.; pop. in 1870, 15,565. Fox river flows through it, and it is drained by the sources of Wyaconda and Fabius rivers. It has an undulating surface and a rich soil; timber is scarce, but coal is found. The Des Moines Valley railroad touches the N. E. corner, and the St. Louis and Cedar Rapids railroad crosses it. The chief productions in 1870 were 155,817 bushels of wheat, 1,142,635 of Indian corn, 296,013 of oats, 55,135 of potatoes, 18,835 tons of hay, 346,277 lbs. of butter, and 111,137 of wool. There were 7,450 horses, 5,994 milch cows, 10,830 other cattle, 36,364 sheep, and 26,923 swine; 5 grist mills, 10 saw mills, 5 manufactories of saddlery and harness, and 2 wool-carding and cloth-dressing establishments. Capital, Bloomfield. **III.** A N. W. county of Kansas, intersected by Kansas river, which together with the Republican forms most of the N. and N. E. boundary; area, 386 sq. m.; pop. in 1870, 5,526. The surface is undulating prairie; the soil is good. Building stone is abundant. The Kansas Pacific and the Missouri, Kansas, and Texas railroads traverse it. The chief productions in 1870 were 46,550 bushels of wheat, 160,125 of Indian corn, 21,130 of oats, 18,285 of potatoes, 11,431 tons of hay, and 58,525 lbs. of butter. There were 1,308 horses, 1,539 milch cows, and 4,801 other cattle. Capital, Junction City. **IV.** A N. county of Utah, lying on the E. shore of Great Salt Lake; area, 320 sq. m.; pop. in 1870, 4,459. The Wahsatch mountains are in the E. part. The W. part is good agricultural land; small streams from the mountains furnish irrigation. The Union Pacific and the Utah Central railroads cross it. The chief productions in 1870 were 35,146 bushels of wheat, 5,970 of Indian corn, 9,789 of potatoes, and 737 tons of hay. The total value of live stock was $80,180. Capital, Farmington.

DAVIS, Andrew Jackson, an American clairvoyant, born at Blooming Grove, Orange co., N. Y., Aug. 11, 1826. Early in 1843, while he was a shoemaker's apprentice in Poughkeepsie, William Levingston by mesmerism developed in him remarkable clairvoyant powers. Although quite uninstructed, it was said that he was able to discourse fluently on medical, psychological, and general scientific subjects. Soon after, associated with Mr. Levingston, he commenced the treatment of the diseased, giving diagnoses and prescriptions while in the magnetic trance. On March 7, 1844, he fell into a trance, during which for 16 hours he conversed, as he asserts, with invisible beings, and received intimations and instructions concerning the position he was subsequently to occupy as a teacher from the interior state. In 1845, while clairvoyant, he dictated to the Rev. William Fishbough his first and most considerable work, "The Principles of Nature, her Divine Revelations, and a Voice to Mankind." It embraces a wide range of subjects, and repudiates any special authority in the teachings of the Bible. After the completion of this book Mr. Davis ceased to submit himself to magnetic manipulations, but has written several other works, while more or less illuminated, as he claims, by the influence of invisible spirits. These works are severally entitled "The Great Harmonia" (4 vols.), "The Approaching Crisis," "The Penetralia," "The Present Age and Inner Life," "The Magic Staff" (his autobiography), "History and Philosophy of Evil," "Death and the After Life," "The Harbinger of Health," "Morning Lectures," "Arabula, or the Divine Guest," "Fountain with new Jets of Meaning," "Memoranda of Persons, Places, and Events," "Stellar Key to the Summer Land," and "Tale of a Physician." The philosophical and theological portions of these works are regarded by his friends as little more than repetition of his first work, interspersed with startling asseverations concerning things in heaven and earth that admit of no direct verification. As a writer he has been more successful than as a lecturer, though in this latter capacity he has had some influence; and to his general instrumentality "spiritualism" partly owes its inauguration. He resides in Orange, N. J.

DAVIS, Charles Henry, an American naval officer, born in Boston, Mass., Jan. 16, 1807, died in Washington, Feb. 18, 1877. He entered the navy in 1823, and was assistant in the coast survey 1844–'9. In 1846–'9 he was engaged in a survey of the waters about Nantucket, during which he discovered the "new south shoal," and several smaller shoals, directly in the track of ships sailing between New York and Europe, and of coasting vessels from Boston. These discoveries were thought to account for several wrecks and accidents before unexplained, and they called forth the special

acknowledgments of insurance companies and merchants. During and after his connection with the coast survey, he was appointed on several commissions to examine the harbors of Boston, New York, Charleston, &c. These investigations led him to the study of the laws of tidal action, the results of which are given in his "Memoir upon the Geological Action of the Tidal and other Currents of the Ocean" ("Memoirs of the American Academy," new series, vol. iv.), and the "Law of Deposit of the Flood Tide" ("Smithsonian Contributions," vol. iii.). The "American Nautical Almanac" owes its foundation directly to his efforts. He was appointed the first superintendent of the work in 1849, and continued at the head of this establishment till the autumn of 1856, when he was ordered to naval service in the Pacific, as commander of the sloop of war St. Mary's. After the breaking out of the civil war he was assigned to the Mississippi squadron, of which he was appointed flag officer, May 9, 1862, and on the 11th repulsed an attack by the confederate flotilla. He in turn attacked the latter, June 6, opposite Memphis, capturing or destroying all but one vessel; this action was immediately followed by the surrender of Memphis. He then joined Farragut, and was engaged in various operations near Vicksburg and in the Yazoo river. He was made lieutenant in 1834, commander in 1854, captain in 1861, commodore in 1862, and rear admiral in 1863. In 1862 he was appointed chief of the bureau of navigation; in 1865–'7 he was superintendent of the naval observatory at Washington, and in 1867–'9 commander of the South Atlantic squadron, after which he resumed his scientific duties at Washington. Besides articles on astronomy and geodesy, he published a translation of Gauss's *Theoria Motus Corporum Cœlestium* (Boston, 1858).

DAVIS, Edwin Hamilton, an American physician and archæologist, born in Ross co., Ohio, Jan. 22, 1811. From 1829 to 1833, while a student of Kenyon college, Ohio, he explored the mounds of that vicinity, and read a paper on the subject before the philomathesian society, afterward enlarged and read at the commencement of 1833. The suggestions of Daniel Webster, then making a tour of the West, stimulated him to continue these researches. Their results during 15 years are embodied in "Monuments of the Mississippi Valley," which forms vol. i. of the "Smithsonian Contributions to Knowledge." He received his medical degree at Cincinnati in 1837, after which he practised in Chillicothe until 1850, when he was called to fill the chair of materia medica and therapeutics in the New York medical college. He is the author of a "Report on the Statistics of Calculous Diseases in Ohio" (1850), and has been an occasional contributor to some of the scientific and medical journals.

DAVIS, Henry, an American clergyman, born at East Hampton, N. Y., Sept. 15, 1770, died at Clinton, March 7, 1852. He graduated at Yale college in 1796, became tutor successively at Williams and Yale colleges, and in 1806 professor of Greek at Union college. In 1809 he was chosen president of Middlebury college, Vermont, and in 1817 accepted the presidency of Hamilton college, New York, having in the year preceding declined the presidency of Yale college. He continued at the head of Hamilton college till 1833, and was meanwhile active in establishing the theological seminary at Auburn, and the American board of commissioners for foreign missions. In 1829 and 1830 no students were graduated at the college because of a dispute between the president and the trustees upon a case of discipline. After his resignation in 1833 he published a "Narrative of the Embarrassments and Decline of Hamilton College." He also published several sermons.

DAVIS, Henry Winter, an American politician, born in Annapolis, Md., in 1817, died in Baltimore, Dec. 30, 1865. He graduated at Kenyon college in 1837, studied law at the university of Virginia, and settled in practice at Alexandria, Va., but in 1850 removed to Baltimore. He was elected to congress from Maryland as a democrat in 1855, and was reëlected the two following terms. In 1859 he ended a long contest for the speakership resulting from a tie by voting for Mr. Pennington, the republican candidate for speaker; whereupon the legislature of Maryland passed a resolution that he had misrepresented the state and forfeited the confidence of her people. After the opening of the civil war, when Maryland seemed about to join the seceding states, he opposed this purpose, and its prevention was due in no small measure to his efforts. In 1863 he was re-elected to congress, and was made chairman of the committee on foreign affairs. Being a southerner and representing a slave state, his advocacy of emancipation and suffrage for the blacks made him one of the most conspicuous civilians during the war. In 1852 he published "The War of Ormuzd and Ahriman in the Nineteenth Century." A volume of his speeches was published in 1867.

DAVIS, Jefferson, an American soldier and statesman, born June 3, 1808, in that part of Christian co., Ky., which now forms Todd county. Soon after his birth his father removed to Mississippi, and settled near Woodville, Wilkinson county. Jefferson Davis received an academical education, and was sent to Transylvania college, Ky., which he left in 1824, having been appointed by President Monroe a cadet in the military academy at West Point, where he graduated in 1828. He remained in the army seven years, and served as an infantry and staff officer on the N. W. frontier in the Black Hawk war of 1831–'2, and in March, 1833, was made first lieutenant of dragoons, in which capacity he was employed in 1834 in various expeditions against the Comanches, Pawnees, and other hostile Indian tribes. He resigned his commission

June 30, 1835, and having married the daughter of Zachary Taylor, afterward president of the United States, but at that time a colonel in the army, he returned to Mississippi, and became a cotton planter. For several years he lived in retirement, occupied chiefly with study. In 1843 he began to take an active part in politics on the democratic side, and in 1844 was one of the presidential electors of Mississippi to vote for Polk and Dallas. In 1845 he was elected a representative in congress, and took his seat in December of that year. He bore a conspicuous part in the discussions of the session on the tariff, on the Oregon question, on military affairs, and particularly on the preparations for war against Mexico, and on the organization of volunteer militia when called into the service of the United States. In his speech on the Oregon question, Feb. 6, 1846, he said: "From sire to son has descended the love of union in our hearts, as in our history are mingled the names of Concord and Camden, of Yorktown and Saratoga, of Moultrie and Plattsburgh, of Chippewa and Erie, of Bowyer and Guilford, of New Orleans and Bunker Hill. Grouped together, they form a monument to the common glory of our common country; and where is the southern man who would wish that that monument were less by one of the northern names that constitute the mass?" While he was in congress, in July, 1846, the first regiment of Mississippi volunteers, then enrolled for service in Mexico, elected him their colonel. Overtaking the regiment at New Orleans on its way to the seat of war, he led it to reënforce the army of Gen. Taylor on the Rio Grande. He was actively engaged in the attack and storming of Monterey in September, 1846; was one of the commissioners for arranging the terms of the capitulation of that city; and distinguished himself in the battle of Buena Vista, Feb. 23, 1847, where his regiment, attacked by an immensely superior force, maintained their ground for a long time unsupported, while the colonel, though severely wounded, remained in the saddle until the close of the action. At the expiration of the term of its enlistment, in July, 1847, the Mississippi regiment was ordered home; and while on his return he received at New Orleans a commission from President Polk as brigadier general of volunteers, which he declined accepting, on the ground that the constitution reserves to the states respectively the appointment of the officers of the militia, and that consequently their appointment by the federal executive is a violation of the rights of the states. In August, 1847, he was appointed by the governor of Mississippi United States senator to fill a vacancy, and at the ensuing session of the state legislature, Jan. 11, 1848, was unanimously elected to the same office for the residue of the term, which expired March 4, 1851. In 1850 he was reëlected for the ensuing full term. In the senate he was chosen chairman of the committee on military affairs, and took a prominent part in the debates on the slavery question, in defence of the institutions and policy of the slave states, and was a zealous advocate of the doctrine of state rights. In September, 1851, he was nominated for governor of Mississippi by the democratic party, in opposition to Henry S. Foote, the candidate of the Union party. He resigned his seat in the senate on accepting the nomination, and was beaten in the election by a majority of 999 votes; a marked indication of his personal popularity in his own state, for at the "convention election," two months before, the Union party had a majority of 7,500. After his defeat he remained in retirement until the presidential contest of 1852, when he delivered speeches in behalf of Gen. Pierce in Mississippi, Tennessee, and Louisiana. In 1853 he was appointed by President Pierce secretary of war, which post he held till the inauguration of President Buchanan in 1857. His administration of the war department was marked by ability and energy, and was highly popular with the army. He proposed or carried into effect, among other measures, the revision of the army regulations; the introduction of camels into America; the introduction of the light infantry or rifle system of tactics; the manufacture of rifled muskets and pistols and the use of the Minié ball; the addition of four regiments to the army; the augmentation of the seacoast and frontier defences; and the system of explorations in the western part of the continent for geographical purposes, and for determining the best route for a railroad to the Pacific ocean. On his retirement from the war department he reëntered the senate for the term ending March 4, 1863. In the 35th congress he was conspicuous in the discussions on the French spoliation bill, which he opposed, and on the Pacific railroad, for the southern route of which he was a zealous advocate. He was also prominent in the contest growing out of the Lecompton constitution for Kansas, in which he opposed Mr. Douglas, and in the settlement of which by the Kansas conference bill he took a chief part, declaring in a letter to the people of his state that the passage of that bill was "the triumph of all for which we contended." In the 36th congress, which met in December, 1859, he was the recognized leader of the democrats in the senate. His name for years had been frequently mentioned as a candidate of the democratic party for the presidency. In the summer of 1858 he made a tour of the eastern states, and in October addressed a democratic meeting in Boston, and a few days later a similar meeting in New York. In reply to an invitation to attend a festival in Boston in January, 1859, to celebrate the birthday of Daniel Webster, he wrote a letter expressing strong Union sentiment, and concluding thus: "I send you my cordial greetings to the friends of the constitution, and ask to be enrolled among those whose

mission is, by fraternity and good faith to every constitutional obligation, to insure that, from the Aroostook to San Diego, from Key West to Puget sound, the grand arch of our political temple shall stand unshaken." At the convention for the nomination of president in 1860 he received many votes, although his friends announced that he did not desire the nomination. On the assembling of congress in December of that year, although from his position and convictions he acted in concert with those who were leading the movement to a separation of the states, yet there can be no doubt his feelings and sympathies were for the preservation of the Union. He was appointed one of the special committee of thirteen in the senate to consider and report on the agitated and distracted condition of the country, and the grievances between the states. At his request he was excused. The vote was afterward reconsidered, when he arose and said: "If, in the opinion of others, it be possible for me to do anything for the public good, the last moment while I stand here is at the command of the senate. If I could see any means by which I could avert the catastrophe of a struggle between the sections of the Union, my past life, I hope, gives evidence of the readiness with which I would make the effort. If there be any sacrifice which I could offer on the altar of my country to heal all the evils, present or prospective, no man has the right to doubt my readiness to do it." Mississippi seceded Jan. 9, 1861. On the 24th Mr. Davis, being officially informed thereof, returned to his home. Before his arrival there he had been appointed by the convention commander-in-chief of the army of Mississippi, with the rank of major general. In a speech to the Mississippi legislature in December, 1862, he said: "I then imagined that it might be my fortune again to lead Mississippians in the field, and to be with them where danger was to be braved and glory won. I thought to find that place which I believed to be better suited to my capacity, that of an officer in the service of the state of Mississippi." On Feb. 4, 1861, the confederate congress met at Montgomery, organized a provisional government for the seceded states, and on the 9th, by a unanimous vote, elected Jefferson Davis "president of the Confederate States of America." He arrived at Montgomery on the 16th, and was inaugurated on the 18th, Alexander H. Stephens of Georgia having been inaugurated as vice president about a week earlier. There can be no doubt that in this selection of the president of the confederacy the congress ratified the previous choice of the southern people, who almost unanimously regarded Mr. Davis as the man best fitted for the position by ability, character, and political and military experience. He selected for his cabinet Robert Toombs of Georgia as secretary of state, Leroy P. Walker of Alabama as secretary of war, Charles G. Memminger of South Carolina as secretary of the treasury, Stephen R. Mallory of Florida as secretary of the navy, Judah P. Benjamin of Louisiana as attorney general, and John H. Reagan of Texas as postmaster general. The last three continued in the cabinet as long as the confederate government maintained its existence. Toombs, Walker, and Memminger were sooner or later succeeded by others. In his inaugural address to the confederate congress Mr. Davis said: "We have entered upon a career of independence, and it must be inflexibly pursued. Through many years of controversy with our late associates of the northern states, we have vainly endeavored to secure tranquillity and obtain respect for the rights to which we were entitled. As a necessity, not a choice, we have resorted to the remedy of separation, and henceforth our energies must be directed to the conduct of our own affairs and the perpetuity of the confederacy which we have formed." In the same spirit, in his first message to the congress, on April 29, he said: "All we ask is, to be let alone—that those who never held power over us shall not attempt our subjugation by arms. This we will, we must resist, to the direst extremity." An attempt to victual Fort Sumter led to its reduction. "Even then," said Mr. Davis in his message, "I was sincerely anxious to avoid the effusion of blood." On May 20 the confederate government was transferred from Montgomery to Richmond, and a few days later Mr. Davis followed it. On the journey to Richmond he was received with every demonstration of popular favor and exultation, and his first days in the new capital were devoted to ovations, reviews of troops, and speeches to the multitude. An army of 30,000 men, commanded by Beauregard and Johnston, had been gathered in northern Virginia. In July the Union troops advanced toward Manassas, and were routed in the battle of Bull Run. Mr. Davis left Richmond on the morning of the battle, intending to be present at the conflict; but the victory was virtually won before he arrived. Much controversy afterward arose on the question whether the failure to pursue McDowell's army was owing to the interference of the confederate president (as charged by some newspapers) or not. It appears, however, from subsequent developments, that Mr. Davis was in favor of an immediate pursuit, but yielded to the adverse opinions of his generals (Johnston and Beauregard), who considered it impracticable or injudicious. The result at Bull Run was followed by a period of apparent inaction. Neither combatant was prepared for active operations in the vast conflict thus suddenly begun. Whatever policy might be adopted by either could not be undertaken without sufficient military preparations to sustain it. All the speeches and messages of Mr. Davis, thus far, indicate that he was sincerely desirous of peace. In his inaugural he said: "I enter upon the duties of the office to which I have been chosen with the hope that the beginning

of our career as a confederacy may not be obstructed by hostile opposition to our enjoyment of the separate existence and independence which we have asserted." In his first message he said: "The moment that this pretension (our subjugation) is abandoned, the sword will drop from our grasp, and we shall be ready to enter into treaties of amity and commerce." Such views naturally inclined him to a defensive policy. The preservation of the Union, at which the North aimed, required invasion and conquest. Thus the policy of either side was settled. In November, 1861, a presidential election was held throughout the confederacy, and Mr. Davis was chosen president for the full term of six years, and Mr. Stephens vice president. On Feb. 18, 1862, the first congress under the permanent constitution of the Confederate States assembled in Richmond. On the 22d Mr. Davis was inaugurated president. His inaugural address, and his subsequent message, sent to the congress a few days afterward, were largely devoted to a vindication of the principles on which the confederacy had been organized and conducted, to a review of recent military operations, and to the suggestion of measures for promoting the strength and efficiency of the confederate army and navy. One of the first measures of the confederate congress after the inauguration was the passage of a conscription law, to which Mr. Davis reluctantly assented. The conscription undoubtedly saved the confederacy for a time, as a similar law enabled the north to bring its large armies into the field. But in either case it was a stringent measure, to which the American people were entirely unused. In the south it was warmly opposed in many quarters, while in the north it led to fearful riots. In the spring of 1862, under authority conferred by congress, the privilege of the writ of *habeas corpus* was suspended for ten miles around the city of Richmond, and a military police was constituted, under Gen. Winder, which continued to exist, with more or less authority, according to the legislation of congress, during the remainder of the war. The principal reason given for this step was the presence of federal emissaries in the capital, and the existence of dangerous plots and intrigues, requiring prompt and active measures for their suppression. In December, 1862, Mr. Davis visited the confederate camps in the western department, spending several weeks in obtaining information as to the condition and wants of that section of the confederacy. During this excursion he visited the capital of Mississippi, and made an address to the legislature, defending the conscription law, and ending with the declaration that "in all respects, moral as well as physical, the confederacy was better prepared for war than it was a year previous." This declaration was justified by the facts of the case. The confederacy was undoubtedly in its best estate and strongest condition at the end of 1862 and the beginning of 1863. The proclamation of emancipation by President Lincoln, to take effect Jan. 1, 1863, called out from Mr. Davis, in his next message to the confederate congress, an indignant commentary on the cruelty of a measure by which "several millions of human beings of an inferior race, peaceful and contented laborers in their sphere, are doomed to extermination." He pronounced the emancipation proclamation "the most execrable measure recorded in the history of guilty man." In April, 1863, in compliance with a request of the confederate congress, he issued an address to the people of the south, in which he said: "Alone and unaided we have met and overthrown the most formidable combinations of naval and military armaments that the lust of conquest ever gathered together for the subjugation of a free people. We began this struggle without a single gun afloat, while the resources of our enemy enabled them to gather fleets which, according to their official list, published in August last, consisted of 437 vessels, measuring 840,000 tons, and carrying 3,026 guns. To oppose invading forces composed of levies which have already exceeded 1,300,000 men, we have no resources but the unconquerable valor of a people determined to be free. . . . . The contrast between our past and present condition is well calculated to inspire full confidence in the triumph of our arms. At no previous period of the war have our forces been so numerous, so well organized, and so thoroughly disciplined, armed, and equipped as at present." Three months later these brilliant prospects were clouded by the defeat of Gen. Lee at Gettysburg on July 3, and the equally disastrous surrender on the following day of Gen. Pemberton at Vicksburg, with 27,000 men, soon followed by that of Port Hudson with 6,000. These conspicuous disasters were the signal for a fierce arraignment of the administration of President Davis in all parts of the Confederate States. He was held responsible for the advance into Pennsylvania, though it had been advised by Gen. Lee, and had been made with the exultant approval of the whole south. He was charged with unworthy partiality in appointing his personal favorite Pemberton to the command in the southwest; and Pemberton himself, a northerner by birth, was accused of having betrayed his command. To add to the discontent produced by these severe military reverses, the finances of the confederacy became in 1863 hopelessly depreciated. They had never been on a sound basis, nor were they ever well managed; but the disasters of July, 1863, caused such a decline in confederate currency that it became almost worthless. The annual message of President Davis to congress in December, 1863, frankly stated the peril of the position, and indicated as the three great wants of his government men, money, and food. The army of northern Virginia had lost more than a third of the force with which it invaded Penn-

sylvania; the losses of the western army were still greater. To remedy these deficiencies, the president recommended "restoring to the army all who are improperly absent, putting an end to substitution, modifying the exemption law, restricting details, and placing in the ranks such of the able-bodied men now employed as wagoners, nurses, cooks, and other employees as are doing service for which the negroes may be found competent." For the financial troubles no remedy could be found. Mr. Memminger, whose administration of the treasury department had not fulfilled expectations, resigned, and Mr. Trenholm took his place with a reputation for financial talent from which much was expected. But no talents, no ingenuity could arrest the downward tendency of the confederate currency. There was little coin in the country, the people could not bear more taxation, and enormous issues of paper promises to pay stimulated a general spirit of speculation, which accelerated the downfall of the already tottering structure of the confederacy. Equally difficult of remedy was the deficiency of food. With the loss of Kentucky and Tennessee the confederacy lost the main source of its supplies of meat. The army was already on half rations, and the management of the confederate commissary department was a cause of much complaint against the president, who was charged with keeping for personal reasons an unfit man, Col. Northrop, at the head of it. A committee of the confederate congress, however, who investigated the matter, made a report which amply vindicated the commissary general. It was not his mismanagement, but the failure of the resources of the confederacy, that was reducing the army to starvation. So great, indeed, were the straits to which the confederacy was reduced, that when the repeated efforts of its government to have the prisoners released by exchange were rejected, it offered to release them without exchange. Another reason assigned for offering to release the prisoners was the great mortality prevailing among them on account of unaccustomed food—especially bread of Indian corn meal, instead of wheaten flour, which could not be obtained—and the fatality of the southern climate to unacclimated persons from the north. This offer, likewise, was not accepted, although complaints were uttered on all sides against the ill treatment of the prisoners. It is said by confederate writers that President Davis displayed unusual energy and skill in preparing for and carrying on the campaign of 1864, which it was felt by both parties was likely to decide the issue of the war. It opened with confederate successes in Florida, in the southwest, and in North Carolina; which however were of little importance compared with the great struggle in Virginia betwen Lee and Grant, and the brilliant march of Sherman upon Georgia and through Georgia to the sea. The confederate general in command of the forces opposed to Sherman was Joseph E. Johnston, between whom and President Davis no great cordiality had existed since the beginning of the war, while during the progress of events in Georgia a marked difference of opinion had developed itself. Early in 1864 Mr. Davis had warmly approved an offensive campaign, while Gen. Johnston maintained that it would be impolitic to risk a battle, and insisted upon standing on the defensive. Whether it was the result of this conflict of opinion, or some other reason that seemed to Mr. Davis to make it justifiable and necessary, an order was issued on July 17, 1864, to Gen. Johnston, to turn over the command of his army to Gen. Hood. To change commanders in the face of a victoriously advancing enemy was certainly hazardous, and though the campaign under Gen. Johnston had been disastrous, his removal was complained of by a portion of the southern press, being even imputed by some to personal motives on the part of the president. These criticisms were apparently justified by the ill success of Hood in attempting to arrest the advance of Sherman, and his consequent evacuation of Atlanta on Sept. 1. This great blow to the confederacy caused President Davis to visit Georgia, partly to attempt to restore harmony in that state and to check the advance of Sherman. Governor Brown was notoriously disaffected to the confederate administration, and to President Davis, whom he charged with total disregard of the rights of the states. Mr. Davis had one interview with him. He seemed to be convinced that his complaints were not just, but soon resumed opposition. Mr. Davis delivered public addresses at Augusta and Macon, the general tenor of which was an endeavor to revive the drooping spirits of the people and to inspire confidence and hope. He admitted the perils of the situation, but claimed that, if one half of the men then absent from the field would return to duty, the enemy could be defeated. On Sept. 18 he reached Hood's headquarters, and reviewed the army, making a speech of encouragement. Hood's army marched into Tennessee, expecting to deter Sherman's advance by cutting his communications; but the movement left Georgia and South Carolina unprotected, and Sherman, regardless of the force in his rear, marched with little molestation upon Savannah, and thence toward Richmond. Southern writers friendly to Mr. Davis maintain that Hood's campaign was not planned or authorized by the president, while those not friendly to him assert just the contrary. Hood himself, in taking leave of his army in January, 1865, said in speaking of his unfortunate campaign, "I alone am responsible for its conception." The whole situation was succinctly described by Sherman in a telegram to Washington: "Hood has crossed the Tennessee. Thomas will take care of him and Nashville, while Schofield will not let him into Chattanooga or Knoxville. Georgia and South Carolina are at my mercy, and I shall strike." The

conquest of Georgia and South Carolina, the disasters amounting almost to destruction of Hood's army in Tennessee, the defeat of Early in the Shenandoah valley, the steady advance of Gen. Grant upon Richmond, and especially the reëlection of Mr. Lincoln, and the evident determination of the north to continue the contest till the Union was restored, had produced at the beginning of 1865 a despondent conviction in the south that the struggle was hopeless. The confederate congress which assembled in November, 1864, was palpably demoralized, and made a signal display of timidity and vacillation. It did little in the way of legislation, and its occupation during the winter was mainly crimination of the president. Mr. Davis, on the contrary, was still confident and resolute, and with the concurrence of Gen. Lee was planning schemes for concentrating forces to oppose and destroy the army which Sherman was rapidly leading northward from Savannah and Columbia. One of the measures he proposed was the emancipation and enlistment of slaves; but this, which might have been of service, by the delay of congress came too late. Another measure which attracted great attention at the time was to authorize commissioners to hold a conference with President Lincoln, with a view to discussing terms of peace. The commissioners appointed were Stephens of Georgia, Hunter of Virginia, and Campbell of Alabama, who were instructed to proceed to the United States capital, President Lincoln having offered to receive them. They were, however, not permitted to pass beyond Fortress Monroe, and on Feb. 3 they met President Lincoln and Secretary Seward in a steamer anchored in Hampton roads, and had a conference which lasted for several hours, but resulted in nothing. The abandonment of Richmond was now regarded as probable, but there were no preparations inconsistent with the purpose to make all possible resistance. A part of his plan involved the union of the armies of Lee and Johnston, and the defeat of Sherman by their combined forces. Grant's defeat of Lee at Five Forks on April 1, however, made this plan impracticable. On April 2, while seated in his pew during divine service in St. Paul's church, Mr. Davis received a note from the confederate war department communicating the news of Lee's defeat, and the consequent necessity of removal from Richmond. His family had been sent southward some time before, and at 8 P. M., attended by his personal staff, members of his cabinet, and several other officials, he left Richmond by the train for Danville, where he issued a proclamation declaring that the capital had been abandoned only in order to leave the army free to act. "Relieved from the necessity of guarding particular points, our army will be free to move from point to point, to strike the enemy in detail far from his base." He declared it to be his purpose never to submit, and exhorted his countrymen "to meet the foe with fresh defiance and with unconquered and unconquerable hearts." An office was opened to conduct at Danville the functions of government, but this was abandoned in little more than a week, when the news arrived that Lee's army had surrendered to Grant. Mr. Davis and his party then went by railroad to Greensboro, N. C. Here he met Johnston and Beauregard, the former of whom was retreating rapidly before Sherman's advance. From Greensboro he proceeded to Charlotte, where he remained about a week, and where he heard of the assassination of President Lincoln. After his capture he heard that he was accused of having instigated the assassination, and that a proclamation had been issued offering $100,000 for his apprehension. He had contemplated resistance. His plan was to cross the Mississippi with some troops that had joined him from Johnston's army, which, added to the force beyond that river, would make an army respectable in numbers and abundantly supplied from a productive and unexhausted country. Before putting this design into execution, he went to secure the safety of his wife, who had preceded him with a small escort; and having overtaken her, he was encamped near Irwinville, Ga., May 10, when a body of Union cavalry commanded by Lieut. Col. Pritchard captured his camp and arrested him. At the moment of his arrest he had on his ordinary dress, with a raglan overcoat and a shawl on his shoulders, and was going out of his tent, having been aroused by the firing of two parties of the federal pursuers, who in the dark had attacked each other. He was conveyed to Fortress Monroe, where he arrived May 19, and where he was confined for two years. In May, 1867, he was brought before the United States circuit court at Richmond, on a charge of treason, and was admitted to bail, the charge of complicity in the assassination of Lincoln being dropped, as there was no evidence to substantiate it. He made a brief stay in Richmond, where he was well received by the people, and went thence to New York, and then to Canada. In the summer of 1868 he went to England, a mercantile house in Liverpool having offered to take him as a partner without any capital. On arriving in England he became satisfied that the offer was one which he had best not accept. He made a brief visit to France, and soon returned to America. At the term of the United States circuit court held in Richmond in December, 1868, a *nolle prosequi* was entered in his case, and he was accordingly discharged. He was included in the general amnesty of Dec. 25, 1868. Since his discharge he has lived at Memphis, Tenn., where he was president of a life insurance company. In June, 1871, he had a public reception at Atlanta, Ga., and made a speech, in which he said that he still adhered to the principle of state sovereignty, and, confident in the final triumph of truth, despaired not, though for a time the power of its enemies is too great to be resisted.—See "The Life of Jefferson Davis,"

by Frank H. Alfriend (1868), and "The Life of Jefferson Davis," by Edward A. Pollard (1869). Both of these works are by southern writers, the first being friendly to Mr. Davis, the second inimical. See also Craven's "Prison Life of Jefferson Davis" (1866).

DAVIS, Jefferson C., an American soldier, born in Clark co., Indiana, March 2, 1828. At the beginning of the Mexican war he enlisted in Col. Lane's Indiana regiment, and was promoted in 1848 to second lieutenant in the first United States artillery for gallant conduct at Buena Vista. He became first lieutenant in 1852, and in April, 1861, was one of the garrison of Fort Sumter during the bombardment. In May of the same year he was promoted to captain, and given leave of absence to raise the 22d Indiana volunteers, of which he became colonel. For gallant conduct at Milford, Missouri, where he captured a superior force, he was made brigadier general of volunteers, Dec. 18, 1861. At the battle of Pea Ridge in March, 1862, he commanded a division. In April he participated in the battle of Corinth, and after the evacuation of that place by the confederates was assigned to the army of the Tennessee. On Sept. 29, 1862, he killed Gen. Nelson after an altercation in a hotel in Louisville; he was arrested, but was never tried, and was soon restored to duty. He commanded a division in the battles around Murfreesborough and at Chickamauga in 1862–'3. In 1864 he commanded the 14th corps of Sherman's army in the Atlanta campaign and in the march through Georgia. He received the brevet of major general in 1865, and was made colonel of the 23d infantry, July 28, 1866. He was subsequently stationed on the Pacific coast, commanding for some time the troops in Alaska. In 1873, after the murder of Gen. Canby by the Modoc Indians in southern Oregon, he took command of the forces operating against them, and compelled them to surrender.

DAVIS, John, an English navigator, born at Sandridge, Devonshire, died Dec. 27, 1605. He distinguished himself by three voyages between 1585 and 1587 for the discovery of the northwest passage. In 1585 he discovered the strait which bears his name, and in the following year sailed along the coast of Greenland as far northward as lat. 72° 12′. In 1591 he went as second in command with Cavendish in his unfortunate voyage to the South sea. He afterward made five voyages to the East Indies, and was killed in the strait of Malacca by Japanese pirates. He invented a quadrant which was in use for taking the sun's altitude at sea till it was superseded by Hadley's sextant, and published accounts of two of his voyages, and curious works entitled "The World's Hydrographical Description" (1595), and "The Seaman's Secrets" (1595).

DAVIS, John, an American jurist, born at Plymouth, Mass., Jan. 25, 1761, died in Boston, Jan. 14, 1847. He graduated at Harvard college in 1781, and began the practice of law in Plymouth in 1786. He was the youngest member of the state convention on the question of adopting the federal constitution. For several years he was a member of the state legislature, and in 1795 was appointed by Washington comptroller of the treasury of the United States. In 1796 he was appointed United States attorney for Massachusetts, and removed to Boston. In 1801 he became judge of the district court, and served for more than 40 years. He was learned in many departments, and especially interested in the history and antiquities of New England, and was president of the historical society of Massachusetts from 1818 to 1843. Among his publications are a "Eulogy on George Washington," an "Attempt to Explain the Inscription on Dighton Rock," and an edition of Morton's "New England Memorial," to which he added copious marginal notes, and an appendix replete with curious information.

DAVIS, Sir John Francis, an English diplomatist and orientalist, born in London in 1795. He entered the public service at an early age, in 1816 was attached to Lord Amherst's embassy to China, and in 1834 was joint commissioner with Lord Napier for arranging commercial and other matters with the Chinese government. From 1843 to 1848 he was British plenipotentiary and chief superintendent of British trade in China, and governor of Hong Kong. He was created a baronet in 1845, and, after his return to England, a knight commander of the bath in 1854, and subsequently became deputy lord lieutenant of Gloucestershire. His works relating to China are considered of high authority. Among them are: "The Chinese: a general Description of China and its Inhabitants" (2 vols., 1836); "Sketches of China" (2 vols., 1841); "China during the War and since the Peace" (2 vols., 1852); "Chinese Moral Maxims," "Chinese Novels," "Chinese Plays," and *Poëseos Sinicæ Commentarii.* He has also written "The Massacre of Benares."

DAVIS, Matthew L., an American writer, born in 1766, died at Manhattanville, N. Y., June 21, 1850. Originally a printer, he early attached himself in politics to the fortunes of Aaron Burr, and advocated his elevation to the presidency at the time when the balance hung so long undecided between him and Jefferson. For many years he was a newspaper correspondent in Washington. He wrote "Memoirs of Aaron Burr" (2 vols., 1836), and edited Burr's journal, with selections from his correspondence (1838).

DAVIS, Rebecca H. See supplement.

DAVIS, Thomas, an Irish poet, born at Mallow, county Cork, in 1814, died in Dublin, Sept. 16, 1845. He was educated at Trinity college, Dublin, and on the establishment of the "Nation" newspaper in 1842 became one of its principal writers. A conviction of the importance of stirring national ballads in the

formation of the "Young Ireland" party, to which the "Nation" was devoted, induced him to make his first attempts at poetical composition in the columns of that paper; and during the rest of his life he continued to write for it, under the pseudonyme of "A Celt," a variety of lyrical and ballad pieces, which became widely popular. An edition of them appeared in New York in 1860.

DAVIS STRAIT, an arm of the North Atlantic ocean, communicating with Baffin bay, and separating Greenland on the east from Cumberland island on the west. It stretches north from Cape Farewell, about lat. 60° N., to Disco island, near lat. 70° N. Its narrowest part, where it is cut by the arctic circle, is 220 m. wide; its greatest breadth is about 700 m. Its coasts are high, rocky, and broken by numerous bays and inlets, the largest of which are Northumberland inlet and Hudson strait; they are almost barren, and scantily peopled by Esquimaux. Notwithstanding its dangerous currents and vast icebergs, it is a favorite resort for whalers and sealers.

DAVOS, a valley of Switzerland, in the canton of Grisons, situated in the Rhætian Alps, and stretching about 20 m. N. E. and S. W. between wooded mountains, from the small lake of Davos to the valley of the Albula; pop. in 1870, 1,726. The chief place is Davos am Platz, which in the 15th century was the capital of the confederation of the ten courts, and has of late become famous as a watering place for those afflicted with diseases of the chest.

DAVOUST, or **Davout, Louis Nicolas,** a French marshal, born at Annoux, in Burgundy, May 10, 1770, died in Paris, June 1, 1823. At 15 he was appointed second lieutenant of cavalry. In 1792–'3 he served in the army commanded by Dumouriez, and from 1794 to 1796 was a brigadier general in the armies on the Moselle and the Rhine, where Moreau intrusted him with important commands. He accompanied Bonaparte to Egypt, and greatly contributed to the victory of Aboukir. After his return to France he was appointed general of division in 1800, chief commander of the consular guard in 1801, and marshal of the empire in 1804. He took a distinguished part in the victories of Ulm and Austerlitz; and on the same day that Napoleon defeated the Prussians at Jena (Oct. 14, 1806), he won over them the victory of Auerstädt, and was rewarded with the title of duke of Auerstädt. In 1809 he was made prince of Eckmühl for his part in the battle of that name. After Wagram he was appointed military commander in Poland, which country he ruled with an iron hand. In the Russian campaign he defeated Bagration at Mohilev, and was wounded at Borodino. After the disastrous retreat from Russia, he took up his headquarters at Hamburg, where he was soon besieged by the allied armies. He boldly opposed them, at the same time treating the inhabitants of the city with merciless rigor; and it was only in April, 1814, that he consented to deliver the place into the hands of Gen. Gérard, a commissioner of Louis XVIII. Napoleon on his return from Elba appointed him minister of war. After the defeat at Waterloo he was placed in command of all the troops in and around the capital, and was ready for the contest when he received positive orders from the provisional government to negotiate with the allies; and on July 3, 1815, he signed at St. Cloud the capitulation of Paris. A few days later he retired from active life. On the trial of Marshal Ney, he boldly declared that he would not have signed the capitulation of Paris if it had not, in his opinion, guaranteed the safety of all the military men then in that city. His firmness was not palatable to the Bourbons, and he was not fully reinstated in his position till 1818. His biography, by Chénier, appeared in 1866.

DAVY. I. Sir **Humphry,** an English chemist, born at Penzance, Cornwall, Dec. 17, 1778, died in Geneva, Switzerland, May 29, 1829. He was a healthy, active, and forward child, fond of sports and stories, of retentive memory, and of a remarkably affectionate disposition. Among his boyish tastes was that for fishing, which he never lost. After a somewhat desultory education, in which he acquired a good knowledge of Latin and Greek, and appears always to have stood at the head of his class, he commenced the study of medicine in February, 1795, under Mr. Borlase, a surgeon and apothecary of Penzance. His attention was naturally turned to chemistry, which he took up with ardor toward the end of 1797, though only as accessory to his medical education. The reading of Lavoisier's "Elements of Chemistry" first led him to the experimental study of the science. His apparatus was of the rudest kind, his materials such as are most commonly used in medicine, and his first experiments were very simple; yet so rapid was his progress that in four months he had sent to Dr. Beddoes a new theory of heat and light, to which the latter became a convert; this was his first publication, which appeared in 1799, in a volume of essays by Dr. Beddoes. Mr. Gregory Watt, a son of the famous James Watt, came to reside at Penzance in the winter of 1797; and in his society, conversation, and sympathy Davy found the stimulus he needed for the development of his intellectual powers. He also became acquainted with Mr. Davies Gilbert, afterward his successor as president of the royal society of London. The mineralogical and geological structure of the surrounding country, abounding in tin and copper mines, the lithological character of the cliffs and headlands, and the ever-changing air and sea of that tempestuous climate, invited him to investigate the operation of natural causes; and the undeveloped condition of chemical science was favorable to his rapid advance. His very first original experiments, at the age of 18, were to determine the kind of air which filled

the vesicles of the common seaweeds thrown upon the shore, and he demonstrated that the marine plants act upon the air in precisely the same way as the terrestrial, by decomposing carbonic acid under the influence of the sun's rays, to obtain the carbon necessary for their growth, and the oxygen for their respiration. In 1798 he was invited by Dr. Beddoes to become assistant in his pneumatic institution at Clifton, in which pulmonary diseases were treated by the inhalation of different gases; and early in October he went there. He made his experiments on the protoxide of nitrogen (laughing gas) in 1799, and published the results in 1800; he also experimented with carburetted hydrogen, carbonic acid, and nitrogen, thereby seriously injuring his health. About the same time he had taken up the subject of galvanism, which afterward led to some of his greatest discoveries in decomposing the alkalies and alkaline earths. The pneumatic institution soon became very popular under his management, and some of the most obstinate diseases were benefited by the new remedies; the nitrous oxide was found very beneficial in many cases of palsy. The royal institution had just been founded, with the intention of diffusing a knowledge of science in its application to the common purposes of life; Davy accepted the invitation to become lecturer on chemistry, took up his abode in London in March, 1801, and was formally appointed professor in May, 1802. His lectures at once became exceedingly popular; his youth, simple manners, and eloquence, his knowledge of his subject, and his brilliant experiments excited the attention of members of the highest ranks in London, and his society was courted by all. During the 11½ years that he spent in the rooms of the royal institution, his bachelor apartments were furnished in the simplest manner; in the adjoining laboratory he spent most of his time, preparing for his lectures, and conducting his investigations. His observations on tanning were published in the "Philosophical Transactions" for 1803; and his lectures before the board of agriculture, which were delivered till 1813, were published under the title of "Elements of Agricultural Chemistry," a work which has passed through many editions, and has been translated into almost every European language. His researches in electro-chemical science had been commenced at Clifton, and the results are published in the "Philosophical Transactions" from 1808 to 1812, and in the early "Bakerian Lectures" of 1806–'7. The base potassium was discovered Oct. 6, 1807, and sodium a few days after, by decomposing moistened potash and soda by several voltaic batteries; his delight when he saw the globules of potassium appear and take fire as they entered the air was so great that it was some time before he could compose himself sufficiently to continue the experiment. His mental labor and excitement over his discoveries threw him into a typhoid condition, which threatened his life for several weeks. On his recovery he experimented with a battery of 2,000 plates, and showed the simple nature of chlorine, sulphur, and phosphorus, and many other important facts. In 1803 he was elected a fellow, and in 1807 one of the secretaries of the royal society, which appointment he held for five successive years. The medical profession seems now to have been resumed for a short time; but the claims of science had too great an attraction, and he gave up medicine, as he had previously declined an invitation to enter the church. So great was his reputation as a lecturer that he was invited to deliver courses before the Dublin society in 1810 and 1811, for which he received £1,200, and was made doctor of civil law by Trinity college. He was knighted in April, 1812, by the prince regent, and in the same month married Mrs. Apreece, a widow, who brought him a considerable fortune; he was created a baronet in 1818. In the autumn of 1813, by express permission of the French government, granted on account of his scientific reputation, he visited the continent during the war, in company with Mr. Faraday "as his assistant in experiments and in writing." While in Paris, where he spent two months, he became acquainted with Cuvier, Laplace, Gay-Lussac, Humboldt, and Vauquelin; and during this brief period he discovered that iodine is a simple substance, analogous in its chemical relations to chlorine. He remained on the continent until the spring of 1815, visiting the south of France, Italy, and Switzerland, devoting special attention to the volcanic regions, and pursuing his chemical researches on colors, the iodine compounds, and oxymuriate salts, which were published in the "Philosophical Transactions" for 1815. His next discovery placed him among the greatest benefactors of his race. In May, 1812, a terrific explosion of gas took place in the Felling colliery near Newcastle, causing the death of 92 men; and after many other such disasters, a committee of proprietors of mines waited upon Davy to see if he could devise any way of preventing similar accidents. He began by analyzing the gas, and ascertaining in what proportions its mixture with air rendered it most explosive, and the degree of heat necessary to ignite it; from observing that the combustion was not communicated through tubes of small dimensions, he gradually reduced the length of the tubes till he found that a simple metallic gauze, with apertures not exceeding $\frac{1}{22}$ of an inch square, was sufficient to prevent the burning gas inside from igniting the great explosive mass on the outside; he accordingly covered the lamps with a wire tissue, permeable to air and light, but not to flame. This simple contrivance constituted the miner's safety lamp, and has saved the lives of thousands; the dangerous gas may burn within the gauze, and thus give timely warning, and may at last extinguish the lamp, but a suspended platina

spiral will remain glowing in the midst of the explosive gas, and enable the miner to see as long as the air is fit for respiration. His attention was first drawn to the subject in August, 1815, and in December his lamp was completed. Urged to take out a patent for his invention, he replied: "No, my good friend, I never thought of such a thing; my sole object was to serve the cause of humanity; and if I have succeeded, I am amply rewarded in the gratifying reflection of having done so." At the same time George Stephenson was engaged in a similar investigation, and invented a safety lamp embodying essentially the same principles as that of Davy. The two inventions appear to have been made almost simultaneously, each independently of the other. The priority was, however, awarded to Davy, to whom the mining proprietors in 1817 presented a service of plate valued at £2,000, awarding £100 to Stephenson, who was then a mere mining operative. A sharp controversy sprang up, and a further sum of £1,000 was raised and presented to Stephenson. The service of plate presented to Davy was bequeathed by his widow, who died in 1868, to the royal society, to be sold, and the proceeds applied to the encouragement of science. In May, 1818, Davy set out on a second continental journey, visiting Germany, Hungary, and Italy, and returning to England in June, 1819. On the death of Sir Joseph Banks in 1820, he was elected president of the royal society of London, and was annually re-elected for seven years. The last term of his scientific labors extends from 1823 to the summer of 1826, during which time he communicated to the royal society three papers on the preservation of metals by electro-chemical means, and the Bakerian lecture for 1826, "On the Relation of Electrical and Chemical Changes." As in the case of the safety lamps, these papers were intended to remedy a practical evil. His attention was directed by the commissioners of the navy to the corrosion of the copper sheathing of vessels by sea water; he ascertained that the popular notion that impure copper is soonest corroded was an error, and that the corrosion is owing to the joint action of the air and the saline ingredients in the water; he succeeded in preserving the copper sheathing from corrosion by rendering it negatively electrical by small pieces of tin or zinc, or iron nails, these metals making a surface of copper from 200 to 300 times their own size so electrical as to have no action on sea water. The very perfection of the protection rendered this method practically inapplicable, as shells and seaweeds adhered to the non-corroded surface; but this principle of galvanic protection has been successfully applied to various important uses in the arts and sciences. In 1824 he made a journey to Norway, Sweden, Denmark, Holstein, and Hanover, fishing and hunting, and communicating with their eminent men, among whom were Berzelius, Oersted, Gauss, Olbers, and Schumacher. In 1825 he began to experience considerable indisposition, which ever after affected his ordinary elasticity of spirits, depressed also by the illness and death of his mother in 1826. He had suffered for more than a year with numbness and pain in his right arm, when toward the close of 1826 a paralytic attack affected his right side; his mental faculties were not impaired, and while confined to his room he corrected the proof sheets of his "Discourses to the Royal Society," published in January, 1827. In this month he had so far recovered as to start on a journey to the continent, going through France over Mont Cenis into Italy, where he occupied himself in hunting, fishing, and observations on natural history and chemical science, for about three months; he then journeyed through various parts of southern Germany and Switzerland, returning in October, with health and strength slightly improved, to England, where he remained until March, 1828. "Salmonia, or Days of Fly Fishing," is a kind of dramatization of the most interesting parts of his journal in these last travels, rendered doubly valuable by his observations in natural history. Finding no permanent improvement in his health, he left London again in March, 1828, for the Alpine regions of southern Austria, where he passed the summer, spending the winter in Italy; during this journey he wrote "Consolations in Travel," his last writing, which Cuvier calls the work of a dying Plato. On Feb. 20, 1829, he experienced at Rome a sudden and severe paralytic attack, which ultimately proved fatal, though he so far improved as to quit Rome on the last of April for Geneva, where he arrived May 28. At 2½ the following morning he was taken alarmingly ill, and in a few moments expired; he was buried, in accordance with his expressed wish, where he died, in the city of Geneva, on June 1. His brother believed that the paralysis was caused by softening of the brain, which, with some enlargement of the heart, was the cause of his death. Sir Humphry Davy was of middle stature, 5 ft. 7 in. in height, well proportioned and muscular, and able to endure considerable fatigue; of sanguine temperament, warm in his feelings, of cheerful disposition, fond of company, persevering and observing. He was chosen a member of the French institute in 1817; he was also connected with most of the great academies of Europe, and was by universal consent considered without a superior, if he had an equal, among the chemists of his time. His memory is cherished at Geneva, where his widow founded a prize in his honor, to be given every two years for the most original and important discovery in chemical science. A statue, after the portrait by Lawrence, is to be erected to his memory at Penzance, at a cost of £6,000. Besides the life by his brother, there is one by John Ayrton Paris, M. D. (2 vols. 8vo, London, 1831). **II. John,** an English physician, brother of the preceding, born at Penzance, May 24, 1791, died April 24,

1868. After taking his degree of M. D. at the university of Edinburgh in 1814, he was attached to the English army, and travelled extensively in the East. He was the author of several works, the principal of which are: "Life and Works of Sir Humphry Davy" (9 vols., London, 1839–'40, the life constituting vol. i.); "An Account of the Interior of Ceylon and of its Inhabitants, with Travels in that Island" (4to, London, 1821), especially valuable for its details on the natural history of Ceylon; "Researches, Physiological and Anatomical" (2 vols. 8vo, London, 1839); "Notes and Observations on the Ionian Islands and Malta, with some Remarks on Constantinople and Turkey" (2 vols. 8vo, 1842); and "Diseases of the Army" (1863). He spent most of his life in the foreign army service, but was the travelling companion and physician of his illustrious brother during the last period of his life. He published many important papers in the "Philosophical Transactions," several of which are collected with illustrations in his "Researches." In 1858 he published "The Fragmentary Remains of Sir Humphry Davy."

DAWES, Rufus, an American poet, born in Boston, Jan. 26, 1803, died in Washington, Nov. 30, 1859. He entered Harvard college in 1820, but did not graduate, on account of a charge of participating in some disturbance. The charge was afterward disproved, and furnished the occasion for his first published poem, directed against the Harvard faculty. He was admitted to the bar, but never practised. He was a contributor to the "United States Literary Gazette," and conducted for a time "The Emerald," a journal printed at Baltimore. He published in 1830 "The Valley of the Nashaway, and other Poems;" and in 1839, "Geraldine, Athenia of Damascus, and Miscellaneous Poems," comprising descriptions of natural scenery, songs, and odes. The next year he published "Nix's Mate," a historical romance. He was a Swedenborgian, and frequently preached.

DAWISON, Bogumil (*i. e.*, Theophilus), a Polish actor, born in Warsaw, May 15, 1818, died in Dresden, Feb. 2, 1872. His parents were poor Jews, and his attainments were due to his own exertions. He first appeared on the stage in Warsaw in 1837, and subsequently in Wilna and Lemberg. He afterward travelled in Germany, and in 1847 became connected with the Thalia theatre in Hamburg. Two years later he went to Vienna, where his great talent became manifest in his classical personations. He was soon recognized as one of the greatest actors of his age, and received an engagement for life at the royal theatre in Dresden, where he remained from 1854 to 1864, subsequently appearing on the principal stages of Europe. In 1866 he visited the United States, and played for two years in the principal cities to enthusiastic audiences. After his return to Europe he became insane, in which condition he remained till his death.

DAWSON. I. A N. county of Georgia, bounded S. E. by the Chestatee river, and drained by the Etowah; area, 200 sq. m.; pop. in 1870, 4,369, of whom 337 were colored. The surface is hilly, and the soil in parts fertile. The chief productions in 1870 were 22,313 bushels of wheat, 102,066 of Indian corn, and 19,690 bales of cotton. The value of live stock was $105,282. Capital, Dawsonville. **II.** A S. central county of Nebraska, bounded S. W. by the Platte river, and intersected by the S. branch of Loup fork; area, 1,450 sq. m.; pop. in 1870, 103. The surface is level and the soil in some parts sterile. The Union Pacific railroad passes through the S. part. Capital, Dawson. **III.** The N. E. county of Montana, bounded N. by British America, and E. by Dakota; area, about 30,000 sq. m.; pop. in 1870, 177. It is intersected by the Missouri river, and watered by Milk river, Mussel Shell river, and other tributaries of the Missouri. The Yellowstone crosses the S. E. corner. Little Rocky mountains are in the W. part. The Northern Pacific railroad is to cross the S. E. corner.

DAWSON, John William, a Canadian geologist and naturalist, born in Pictou, Nova Scotia, in October, 1820. He completed his studies at the university of Edinburgh, and on his return home devoted himself to the study of the natural history and geology of the provinces of Nova Scotia and New Brunswick. The results of these investigations are combined in his "Acadian Geology" (2d ed., 8vo, 1868). Since 1843 he has contributed largely to the proceedings of the geological society of London, and to various American and Canadian periodicals. He has written also monographs on special subjects connected with geology, such as his researches on the anatomy of the reptiles of the carboniferous series, entitled "Air-Breathers of the Coal Period," on "The Postpliocene Deposits of the St. Lawrence Valley," and their relations to the rival theories of the glacial period, and especially his studies in fossil botany. His two volumes on the Devonian and the carboniferous flora of eastern North America, published recently by the geological survey of Canada, illustrated with drawings by his daughter, are the most important contributions yet made to the palæozoic botany of North America. His studies in the lower forms of animal life, both recent and fossil, have been numerous and valuable, and he is the discoverer of that oldest known form of animal life, the *eozoon Canadense* of the Laurentian limestones, in the investigation of which he was associated with Logan, Carpenter, and Sterry Hunt. He is the author also of "Archaia, or Studies on the Cosmogony and Natural History of the Hebrew Scriptures" (1858), and "The Story of the Earth and Man" (1872), in the latter of which he combats the theory of the origin of species commonly called Darwinism. In 1850 he was appointed superintendent of education for Nova Scotia, in which position

he reorganized the schools of that province. In 1855 he was appointed principal and professor of natural history in the McGill university at Montreal, of which he has since become vice chancellor. He also organized and has managed for the past 16 years the Protestant normal school for the province of Quebec, and within the last three years he has established a school of practical science in his university. Dr. Dawson has the degree of LL. D. from McGill university, and is a fellow of the royal and geological societies of London, and a member of many other learned societies.

DAX, a town of S. W. France, in the department of Landes, on the left bank of the Adour, 25 m. N. E. of Bayonne; pop. in 1866, 9,469. It is a principal station on the railway from Bordeaux to Bayonne. It is of ancient origin, with ditches and ramparts of Roman construction. The most remarkable building is the cathedral, built under Louis XIV. It has manufactories of liqueurs and delft, and some trade is carried on in grain, wine, timber, vegetables, wax, and honey; and it is a considerable entrepot of goods exported from France to Spain. Its chief attraction now is its hot mineral springs, whose temperature varies from 86° to 166° F. From these it was called by the Romans Aquæ Tarbellicæ, afterward by the French Ville d'Acqs, and then simply Dax.

DAY, the period of the earth's rotation on its axis. The distance of the first fixed stars is so great that their apparent positions are not affected by the motion of the earth in its orbit; hence the time between the successive passages of a fixed star or any other equally fixed point of the heavens over a meridian is uniform, and is called a sidereal day. The point of the heavens usually employed is the vernal equinox, which, though not absolutely fixed, does not vary apparently during a single day. This day is only used by astronomers. In common life the day is measured by the return of the sun to the meridian, called the solar day. It varies from several causes, its average length being about four minutes greater than that of the sidereal day. The principal causes of variation are the motion of the earth in its orbit and its varying distance from the sun. The day according to which clocks and watches are regulated is the average of all the days in the year, and is called the mean solar day. The time of this day is called mean solar time, while the actual time by the sun on any given day is called apparent time. The difference between the two is the equation of time. They coincide four times in a year. Their maximum difference, occurring twice in a year, is about 16 minutes. Astronomers in measuring mean solar time suppose a fictitious sun moving uniformly in the equator, and coming to the vernal equinox at the same instant with another fictitious sun moving uniformly in the ecliptic, and coming to the perigee at the same instant with the real sun. The sidereal day is 23h. 56m. 4·09s. of mean solar time. Astronomers begin the day at noon, and count the hours from 1 to 24. In most countries the civil day begins at midnight, and the hours are counted from 1 to 12 at noon, and thence from 1 to 12 at midnight.—The word day is also used in opposition to night, to denote the time during which the sun is above the horizon. This varies with the latitude and the season of the year. As we go north it increases in summer and decreases in winter. At the equator the day is always a little more, and the night a little less than 12 hours. At the poles the day is a little more, the night a little less than six months.

DAY, Jeremiah, president of Yale college, born in New Preston, Conn., Aug. 3, 1773, died in New Haven, Aug. 22, 1867. He entered Yale college in 1789, but on account of infirm health was not able to go on with the class; but after an absence of several years he resumed his studies, and graduated with high honor in 1795. He succeeded Dr. Dwight in the charge of a school at Greenfield Hill, continued there a year, and was then elected tutor in Williams college, and in 1798 in Yale college. While acting as tutor he began to preach as a candidate for the ministry; but in 1801 he was elected professor of mathematics and natural philosophy in Yale college. His health being still feeble, he was not able to enter on his new duties till 1803, but after that continued in them till 1817, when, on the death of Dr. Dwight, he was elected his successor as president. In July of the same year he was formally inaugurated, and on the same day was ordained as a minister of the gospel. In 1817 he received the degree of LL. D. from Middlebury college, and in 1818 that of D. D. from Union college, and the latter also from Harvard college in 1831. He continued in the presidency of Yale college till 1846, when he resigned on account of feeble health. His learning and talent, united with great kindness of heart, soundness of judgment, and urbanity of manner, secured alike the respect and love of his thousands of pupils. He was distinguished as a mathematician, and as a close and vigorous thinker. His mathematical works, which have passed through numerous editions, are "Algebra" (1814), "Mensuration of Superficies and Solids" (1814), "Plane Trigonometry" (1815), and "Navigation and Surveying" (1817). He also published "An Inquiry on Self-Determining Power of the Will, or Contingent Volition" (1838; 2d ed., 1849), "An Examination of President Edwards's Inquiry as to the Freedom of the Will" (1841), and a number of occasional sermons, and contributed papers to the "American Journal of Science and Arts," the "New Englander," &c. An address commemorative of his life and services was delivered by President Woolsey, and published (1867).

DAY, Stephen, the first printer in New England, born in England in 1611, died in Cambridge, Mass., Dec. 22, 1668. He came to

America in 1638, and commenced printing at Cambridge, by direction of the magistrates and elders, in 1639. The first thing printed was the "Freeman's Oath," in 1639; next in the same year an almanac, made by Wm. Pierce, mariner; then the Psalms, "newly turned into metre," in 1640. He also printed a catechism; "Body of Liberties," 100 laws, in 1641; and a second edition of the Psalms, 1647. From his extant works it appears that he was not a skilful printer. The printing house was taken from him about 1648, and put into the hands of Samuel Green.

DAY, Thomas, an English author and philanthropist, born in London in 1748, died Sept. 28, 1789. His father, a collector of the customs, died when Thomas was a year old, leaving him an ample fortune. He was educated at the Charterhouse, and at Corpus Christi college, Oxford, which he left after three years' study, without taking a degree. He was induced to study law, and was called to the bar, but never practised. He resided successively in different parts of the continent, making himself familiar with the wants of the lower classes, and alleviating them to the extent of his power. Indignant with a nobleman who was believed to be a seducer, he challenged him to single combat, but in vain. He selected from the foundling hospital at Shrewsbury two girls 12 years of age, designing to educate them after the principles of Rousseau, and ultimately to marry one of them. His expectations were not realized, although both his *protégées* did honor to his views of education, and one became the wife of his friend Bickwell. In 1778 he married a lady of Yorkshire having opinions and a fortune like his own, and retired to his estates in Essex and Surrey, where he took an active part as an advocate of American independence and parliamentary reform. He published several poems and pamphlets against slavery and the slave trade, and on other political questions, but owes his celebrity chiefly to "The History of Sandford and Merton" (3 vols., 1783–'9), one of the most popular books designed for the information of youth, written with freshness and vigor, and inculcating the virtues and philanthropy which characterized its author. This was followed by a shorter work of fiction, entitled "The History of Little Jack." Day met his death by a kick from a young horse, which he was trying to train upon a humane principle; and his wife was so afflicted by the intelligence that she never again left her darkened chamber, though she survived him two years.

DAYTON, a city and the capital of Montgomery co., Ohio, at the confluence of the Mad and Great Miami rivers, on the Miami canal, 46 m. N. N. E. of Cincinnati, and 66 m. W. S. W. of Columbus; pop. in 1840, 6,067; in 1850, 10,977; in 1860, 20,081; and in 1870, 30,473, of whom 7,423 were foreign born. There were 6,109 families, with an average of 4·99 persons to a family, and 5,611 dwellings, averaging 5·43 persons to a dwelling. The city is regularly laid out on the E. bank of the Great Miami, with streets 100 ft. wide, crossing each other at right angles, lighted with gas, and lined with tasteful private residences, surrounded by fine gardens. The public buildings display a magnificence rarely equalled in commercial cities of such rapid growth. The county court house, planned after the model of the Parthenon, is an imposing edifice, 127 ft. long by 62 ft. wide, of coarse but compact white marble, quarried in the neighborhood. The roof is of stone, the doors are of solid iron, and the cost of the whole was somewhat over $100,000. One of the market houses, 400 ft. long, and paved with blocks of limestone, has accommodations for a city hall and council chamber in the second story. Several lines of railroad furnish ready means of communication with the principal cities of the west, viz.: the Atlantic and Great Western; the Cincinnati, Hamilton, and Dayton; the Dayton and Union; the Dayton and Michigan; the Dayton, Xenia, and Western; and the Cincinnati, Sandusky, and Cleveland. There is an immense water power within the city limits, a great part of which is obtained from a hydraulic canal, built by a company in 1845, and drawing its supply from a point on the Mad river 4 m. above Dayton. The power thus obtained is leased to manufacturers, and the surplus ultimately finds its way to the Miami. Dayton is a place of great industrial activity, and one of the most important of the interior cities of the United States. It is especially noted for its manufactures of railroad cars, paper, stoves, and hollow ware, which amount annually to over $3,000,000. There are also several iron founderies and machine shops, brass founderies, flour mills, saw mills, manufactories of cotton and woollen goods, of linseed oil, agricultural implements, of sash, doors, and blinds, numerous breweries, 3 national banks with $800,000 capital, 2 state banks, and 8 insurance companies with $1,260,000 capital. It is divided into 11 wards. The principal charitable institutions are the city orphan asylum, the county almshouse, and the southern lunatic asylum of Ohio, which has about 250 patients. An institution of great interest is the central national soldiers' home, situated on an elevation 4 m. from the city. It consists of a group of 40 large buildings, including a handsome church of native white limestone, and a hospital of brick, with freestone facings and trimmings, capable of accommodating 300 patients. There are also a brick dining hall seating 3,000, a library, music hall, billiard room, bowling alley, headquarters building, and barracks for the men. The grounds embrace 640 acres, shaded with natural forest trees, handsomely laid out, with fine avenues, a deer park, an artificial lake, natural grotto, hothouses, and flower beds. During 1872 the home provided for 2,426 disabled soldiers; the current expenses amounted to $199,136 68. The public schools are numerous

and of a high character. In 1872 the high school had 6 teachers and an average attendance of 167 pupils; grammar schools, 28 teachers and 836 pupils; primary schools, 54 teachers and 2,580 pupils; evening schools, 5 teachers and 210 pupils; total, 93 teachers and an average attendance of 3,812. The total expenditure for school purposes was $144,149 03, of which, $48,043 10 were for permanent improvements, and $60,302 59 for teachers' wages. The public school library contains 10,000 volumes. Cooper seminary (Presbyterian), an institution for the superior instruction of females, organized in 1843, in 1872 had 8 instructors, 123 students, of whom 76 were in the collegiate department, and a library of 1,200 volumes. There are 2 daily newspapers, 1 tri-weekly (German), 7 weekly (2 German), 3 semi-monthly and 3 monthly periodicals, and 42 churches. Dayton was settled in 1796, and incorporated as a town in 1805, but it made little progress until the opening of the Miami canal in 1829. It received a city charter in 1841.

DAYTON. I. Elias, an officer in the American revolution, born at Elizabethtown, N. J., in 1737, died there in 1807. In 1760 he joined the British forces which were completing the conquest of Canada from the French; and he subsequently commanded a company of militia in an expedition against the northern Indians. This corps was probably a portion of the original "Jersey blues." At the commencement of hostilities with the mother country he was appointed a member of the committee of safety for Elizabethtown, and served as colonel of a Jersey regiment till 1783, when he was promoted to the command of the Jersey brigade. Soon after the battle of Bunker Hill a British transport off the coast of New Jersey surrendered to an expedition of armed boats under his command in conjunction with Lord Stirling. He was in active service during the whole war, taking part in the battles of Springfield, Monmouth, Brandywine, Germantown, and Yorktown, and having three horses shot under him. After the war he served several terms in the legislature, was commissioned major general of militia, was a member of the continental congress, and was on intimate terms with Washington. Upon the formation of the New Jersey society of the Cincinnati, Gen. Dayton was chosen its president, and held that office until his death. **II. Jonathan,** an American statesman, son of the preceding, born at Elizabethtown, N. J., Oct. 16, 1760, died there, Oct. 9, 1824. At the age of 16 he graduated at the college of New Jersey, in 1778 entered the army as paymaster in his father's regiment, and held several commissions at different periods of the war. After the peace of 1783 he was elected to the legislature, and was chosen speaker of the house in 1790. In June, 1787, he was appointed a delegate to the convention at Philadelphia which framed the federal constitution. In 1791 he was elected by the federal party a representative in congress, in which capacity he served for three successive terms, during the last two of which he was speaker of the house. In 1799 he was elected to the United States senate. He afterward served several terms in the council, as the superior branch of the New Jersey legislature was formerly termed. He was arrested for alleged complicity with Aaron Burr in his conspiracy, but no further proceedings were had in the case. **III. William Lewis,** an American statesman, nephew of the preceding, born at Baskingridge, N. J., Feb. 17, 1807, died in Paris, Dec. 1, 1864. He graduated at the college of New Jersey in 1825, and was admitted to the bar in 1830. In 1837 he was elected to the state council, or senate as it is now called, and was made chairman of the judiciary committee, and in 1838 became associate justice of the supreme court of the state. In 1842 he was appointed to fill a vacancy in the United States senate. In 1845 his appointment was confirmed by the legislature, and he was also elected for the full term. He was a free-soil whig, and maintained to the fullest extent the right of congress to legislate for the territories, expressing that view in a speech on the treaty with Mexico in 1847. He was a friend and adviser of President Taylor. He opposed the fugitive slave bill, and advocated the admission of California as a free state, and the abolition of slavery in the District of Columbia. In 1856 he was nominated by the newly formed republican party for the vice presidency, on the ticket with John C. Fremont. In March, 1857, he was appointed attorney general of the state of New Jersey, and held that office till 1861, when President Lincoln appointed him minister to France, which post he held until his death.

DEACON (Gr. *διάκονος*, minister, servant), an inferior minister of the Christian church. The faithful of Jerusalem, at the request of the apostles, chose seven men, whom the latter, with laying on of hands, appointed their own assistants in the ministry. Besides the distribution of alms and the care of the temporal concerns of the infant church, they also preached and baptized (Acts vii. and viii.). Deaconship is a major order in the Latin and Greek churches, ranking next to the priesthood. Bishops and priests are the ordinary ministers of baptism, while deacons are called by the canons the extraordinary or delegated ministers of it. Subdeaconship is also held by both these churches to be a major order. Tertullian, Cyprian, and Cornelius, among others, mention subdeacons. The deacon and subdeacon assist the bishop and priest when they celebrate solemn mass. In the Latin church the reception of subdeaconship implies the obligation of perpetual celibacy. In the Anglican church the deacon is allowed to exercise all priestly functions except consecrating the eucharist and pronouncing absolution. His office is an order of the ministry and a preparation for the priesthood. In the Methodist Episcopal church the

deacons constitute an order in the ministry, are ordained by the bishop, and assist the elders in divine service. In the Presbyterian and some other churches the deacons care for the poor, and to them may be committed the temporal affairs of the church. Among Congregationalists the deacons, besides attending to the poor, assist the pastor in the celebration of the sacraments.

DEACONESS, a female officer of the early church. The institution of deaconesses originated with the apostles, as is clear from Rom. xvi. 1. They are called *πρεσβύτιδες*, elders, in canon xi. of the council of Laodicea, and by St. Epiphanius, because none were chosen for this office but elderly widows. Tertullian says that deaconesses were "widows, mothers, at least 40 years of age, and married only once." Their principal functions were to have charge of the door by which women were admitted to the *matroneum*, or that part of the church set apart for them, and to preside over them while there; to instruct the catechumens of their own sex; to assist the bishop in the solemn baptism of females, and to perform for him all the unctions, except those on the head; to have especial care of the female sick and poor, and to be present in all conversations held by bishops, priests, and deacons with women. In the times of persecution, when prudence forbade sending deacons to visit imprisoned Christians, the deaconesses performed this office of charity. (*Const. Apost.*, iii. 19.) The order of deaconesses was still in existence in the East at the beginning of the 8th century, and it is quite uncertain when it entirely disappeared there. In the greatest number of Latin churches it had fallen into disuse in the 5th century, and its very name was unknown in the 10th. The order was abrogated in France by the council of Orange, A. D. 441, and after this gradually died out in the western church, but in the Greek church continued until the 12th century. Its place is taken in the Roman Catholic church by their various religious orders and congregations. (See Ziegler, *De Diaconis et Diaconissis veteris Ecclesiæ*, xix.)— In recent times the title has been revived in Protestant churches for the so-called institutions or houses of deaconesses, which are communities of women established in several Protestant denominations for purposes of Christian charity, and in particular for nursing the sick. Several attempts made by the reformed churches in the 16th century to revive the apostolical institution of deaconesses proved unsuccessful. In 1836 Pastor Fliedner, of the United Evangelical church of Prussia, established an institution of deaconesses at Kaiserswerth in Rhenish Prussia. The sisters, after a probationary period, engage to serve at least five years, but are allowed to leave during this time if nearer personal or family duties should call for a change of situation. The institution of Kaiserswerth has gradually enlarged its sphere of action and added to the original infirmary an orphan asylum, a normal school, an insane asylum, and a house of refuge for dissolute women. The number of stations established in other parts of Germany and in foreign countries amounted in 1870 to 400; among them were Pesth, Bucharest, Bosna-Serai, Constantinople, Smyrna, Beyrout, Jerusalem, and Alexandria. After this model of Kaiserswerth other "mother houses" (*Mutterhäuser*) of deaconesses have been established at Strasburg (1842), Dresden (1842), Berlin (1843), London (1848), and other places. A house was established in Pittsburgh, Pa., in 1849, by Pastor Fliedner in person. In 1872 there were altogether 48 mother houses or distinct communities of deaconesses, with an aggregate of 2,657 sisters and 648 stations. General conferences of representatives of all the institutions take place from time to time. The fourth was held on Sept. 18 and 19, 1872, at Kaiserswerth, and was attended by representatives of nearly all the institutions. (See Sisterhoods.)

DEAD SEA (Lat. *Lacus Asphaltites;* Arab. *Bahr Lut*, sea of Lot; also called the sea of Sodom, and in the Scriptures the salt sea, sea of the plain, and eastern sea), a salt lake of Palestine, between the mountains of Moab on the east and those of Hebron on the west, about 18 m. E. of Jerusalem, 42 m. long from N. to S., and nearly 10 m. in greatest breadth. The locality is that of the ancient vale of Siddim, which Lot selected when he parted from Abraham, and which was then an attractive region, watered by the Jordan, and containing the cities of Sodom and Gomorrah. Even at that early period the district was probably of peculiar geological character, the vale being described as "full of slime pits" (Gen. xiv. 10). The catastrophe which resulted in the destruction of these cities, and in the formation of the sea, is computed to have occurred about 1900 years before the Christian era. By earthquake, accompanying volcanic action (Gen. xix. 28), the valley appears to have sunk to a great depth, and the waters of the Jordan flowing in produced this sea, which was made intensely salt by the saline strata exposed to their action. On its S. W. side is a mountain retaining the name of Sodom (Usdum), containing strata of salt, out from which stands a lofty pillar of the same material, observed by Lieut. Lynch of the United States navy, which is probably what travellers often describe by the name of Lot's wife. It is about 40 ft. high, standing upon an oval pedestal, the top of which is 40 or 50 ft. above the water. The pillar is capped with limestone. Josephus speaks of a similar pillar, perhaps the same, which he himself saw, and believed to be that into which Lot's wife was transformed. Clement of Rome and Irenæus also mention it. Bitumen or asphaltum, from which the sea receives one of its names, is found along the shores of the lake, and during some recent earthquakes, to which the region is still subject, it was thrown up in large quantities at the

southern extremity of the sea. De Saulcy in 1851 saw huge masses of salt which had been detached by the winter rains and rolled down the mountains, some of them lying in the water. He supposes the pillar described by Lynch to be one of these. Mr. Tristram, in his descriptions of the southern parts, says that sulphur springs are frequent on the shore; sulphur is strewn in layers or in fragments over the plains; and bitumen is ejected in great floating masses from the bottom of the sea, oozes through the fissures of the rocks, is deposited with gravel on the beach, or appears to have been precipitated during some convulsion. From its abundance in this region it is often called Jews' pitch. The banks N. and S. are slippery, with a slimy mud, into which the foot sinks deep, and the tracks thus left are soon lined with incrustations of salt. A similar mud covers a considerable portion of the bottom; and when brought up in sounding, crystals of salt are found sticking to it. But a portion of the bottom is rough and rocky, and subject to sudden and great changes of depth. This feature, in connection with the pieces of lava occasionally found, seems to indicate a formation due to volcanic agency. M. Lartet found that deposits of great depth have accumulated in this valley since its formation; they consist of numerous thin beds of gypsum, marl, flint, and alluvium. These layers, which cover the whole valley, are analogous to those now in process of formation at the bottom of the Dead sea. He saw evidences of volcanic action of a date long posterior to the formation of the valley, and concluded that eruptions have taken place at the N. E. end of the basin, which produced important flows of basalt, some of them extending as far as the Jordan valley itself. Other eruptions of less importance took place directly E. of the lake, of which three reached the eastern shore. The water is dense and bitter with its heavy charge of salt, so that bodies float in it with much greater buoyancy than in other seas. In bathing, one experiences difficulty in keeping the feet down, and a man may float in it breast high without exertion. On anything being dipped into the sea and withdrawn, the water almost immediately evaporates, leaving a thin crust of salt. The southern part of the lake has an average depth of only 13 ft.; but the northern portion, as sounded by Lieut. Lynch and others, is found to reach a maximum depth of more than 1,300 ft. A remarkable feature in the lake is its great depression below the level of the Mediterranean. By the levelling conducted by Lieut. Symonds of the royal engineers, which was confirmed by nearly identical results afterward obtained by the same method by Lieut. Lynch, the difference of level of the two surfaces is 1,312·2 ft. This depression is the deepest of the kind known on the earth. The swift current of the Jordan, often rushing on in rapids dangerous to navigate, even with the iron boats of the expedition under Lieut. Lynch, pours a large volume of water into the deep basin, from which there is no outlet. During the rainy season the level of the sea is raised 10 or 15 ft., and it extends, especially in a southern direction, over the low flats, several miles beyond the ordinary margin of the waters. But in the dry season, when the beach becomes so hot as to blister the feet, and the water acquires a temperature of 90° F. a foot below the surface, evaporation rapidly carries off the excess of water, and reduces the sea to its lowest level. The immense evaporation, which toward the afternoon generally renders the air heavy and dark, and the surrounding marshes, give rise to agues, so that the inhabitants of the vicinity are sickly. At this season the air becomes so highly heated in the deep basin between the precipitous mountains which enclose it, that it is almost irrespirable, and the thermometer often rises to 106° or more, even after the setting of the sun. At midnight it was observed to be 98°. Currents of this heated air sweep in hurricanes over the water. As described by the United States officers, the hot wind blistered the faces of the men exposed to it. Every metallic object was burning hot; the coolest substances were the inner surfaces of the clothing. If a pool of fresh water were found to bathe in, the skin was instantly afterward left dry and parched. The perspiration evaporated as rapidly as it was produced. The hills on each side are precipitous cliffs of limestone and sandstone in horizontal strata. On the east they are rugged mountains 2,000 to 2,500 ft. high, traversed by deep chasms, desolate and bare of vegetation. On the west the height is estimated at 1,500 ft.; but the summit level upon the whole is little if any higher than the surface of the Mediterranean. The whole range along the western shore is limestone, similar to that in the neighboring hills. On the shore and hills are also found large blocks and rocks of a black and inflammable bituminous stone, susceptible of a high polish, which is employed by the natives in mosaic pavements and in making trinkets for pilgrims. On the southwest are the remarkable salt hills of Usdum, which are the principal source of the extreme saltness of the water. On the southeast, beyond the marshes, are sandstone mountains, a continuation of the Edom range, which give place to limestone in the valley of Kerak, but appear again below the limestone mountains of Moab. The peninsula El-Lisan is a post-tertiary deposit of carbonate of lime and sandstone, disintegrated and intermixed with sulphur. On the N. E. angle are large quantities of post-tertiary lava, pumice stone, and various kinds of volcanic slag.—Mr. Costigan, who surveyed the sea in 1835, with a Maltese sailor as his servant, died soon after completing its tour. Lieut. Molyneux of the royal navy met the same fate in 1847. Two of the seamen belonging to the American expedition were sent to the convent of Mar Saba for relief,

and Lieut. Dale, the second officer, before the party left the country, fell a victim to the fever at Beyrout, where Lieut. Lynch also and nearly all his men were attacked by the same disease. In March, 1848, the latter party, despatched by the United States government, and well equipped, passed across, with their boats drawn on trucks by camels, from the bay of Acre, over the mountains of Lebanon, and launched them in the lake of Gennesaret. Thence they descended the Jordan, entering the river on April 10, and passing out of its mouth into the Dead sea on the 19th of the same month. They spent 21 nights on the shores of the Dead sea, and after having thoroughly explored the region, they left it on May 10, sending their boats across the desert to Jerusalem. Contrary to the opinion generally entertained regarding the pestilential atmosphere of this neighborhood, they found numerous animals living upon the shores of the lake, as doves, hawks, partridges, and hares, and also ducks swimming upon its surface; and a curious fact regarding the birds, insects, and other animals here met with, is that they are all of a stone color, described as "the same as the mountains and the shore." In the sample of water brought back by the party no vestige of animal life was detected; but in Jameson's "Philosophical Journal" of February, 1850, it is stated that Ehrenberg found an abundance of infusoria of brackish-water species in samples of the water and sediment brought to him for examination. The want of vegetable matter for food must necessarily to a great extent exclude animal life. A few plants which furnish soda in their ashes are occasionally found on the shore, and at the foot of the cliffs is noticed a scanty vegetation of cane and of the tamarisk shrub, their foliage sometimes of a light green and sometimes of a yellow hue, stained by the exhalations of sulphuretted hydrogen; but the few bushes to be seen often present their branches leafless and incrusted with salt, and the trunks of dead trees scattered here and there add to the desolation of the scene.—De Saulcy came to the conclusion that the sites of Sodom and Gomorrah are to be sought for on the W. shore, and that those cities were not submerged, as is generally supposed. He found extensive ruins on the N. side of the mountain of Usdum, and a mile and a half to the northwest other ruins, which last he believed to be those of Zoar.—Various analyses have been made by eminent chemists of the water taken from the lake, the results of which differ, in consequence no doubt of the different seasons of the year and portions of the lake at which the samples were taken, and also of the different methods of conducting the analyses. The specific gravity, as stated by Lavoisier and Klaproth, is 1·24; by Marcet, 1·211; by Gmelin, 1·212; by Apjohn, 1·153; by Salisbury, 1·1877; and by Lynch, 1·13. The constituents are thus given by different authorities:

TABLE I.

SUBSTANCES.	Pogg. Ann.	Booth and Muckle, depth 1,110 ft.	Genth, 1858.
Chloride of potassium	1·398	0·659	1·0087
" sodium	6·578	7·855	7·5839
" calcium	2·894	3·108	2·8988
" magnesium	10·543	14·590	10·1636
		Brom. potass'm	
Bromide of magnesium	0·251	0·137	0·5341
Sulphate of lime	0·088	0·070	0·0901
Carbonate of lime	....	....	0·0042
Hydrated sesquioxide of iron	....	....	0·0087
Silicic acid	0·003	....	0·0113
Nitrogenous organic matter	....	....	0·0052
Solid parts in 100	21·773	26·419	22·3086

TABLE II.

SUBSTANCES.	Marcet.	Klaproth.
Muriate of lime	3·920	10·60
" magnesia	10·246	24·20
" soda	10·360	7·80
Sulphate of lime	0·054	....
	24·580	42·60
Water	75·420	57·40
	100·000	100·00

The first of the above analyses, from Poggendorff's *Annalen*, is of a sample of the water procured from the north end of the sea, near the mouth of the Jordan.

DEAF AND DUMB, The, persons who have not the sense of hearing, and in consequence want the faculty of speech. The primary defect is deafness; dumbness follows from the resulting inability to control the vocal organs. Dumbness without deafness is very rare, and when not due to malformation is almost invariably a sign of idiocy. A person may be born deaf, or may lose his hearing by disease or accident; deafness is thus medically classed as congenital or adventitious. For educational purposes a different distinction is made. Those who become deaf at so early an age that they have not learned articulate language, or speedily lose all impress of it upon the mind, share the mental characteristics of the congenitally deaf, and are classed with them as true deaf mutes. Those who retain some knowledge of articulate language, acquired through the ear, are called semi-mutes. The distinction lies not in the power or practice of speech, but in the habit of thinking in words.—Deafness is more prevalent than is generally supposed. By the deaf and dumb are usually understood only those so deaf that the ordinary means of vocal communication are unavailable with them. The number of these in a country has invariably proved to have been greatly under-estimated prior to careful enumerations; probably because deafness, unlike blindness, has no outward indication to attract notice. But affections of the ear producing a lower degree of deafness have received comparatively little attention; their extent is not appreciated even

by physicians, except the few who make aural surgery a specialty. When noticed they are too often regarded as merely symptoms of more general disorders, and neglected until too late. The demands made upon the ear in ordinary life do not require such acuteness of perception as to render immediately sensible a diminution of its power; imperfect apprehension is often ascribed to mental rather than physical defects; and the decay of hearing in old age is regarded as natural and inevitable. Yet Von Tröltsch says that in childhood earache and discharges are very common, and in middle life fully one third no longer hear perfectly and normally with one ear. It is not known to what extent the "hard of hearing" have been enumerated with the "deaf and dumb" in censuses; but very few who lose their hearing after the age of ten come to the institutions for the deaf and dumb, whose registers are almost the only sources whence statistics of the causes and ages of deafness are derived.—Enumerations of the deaf and dumb are made in the decennial censuses of the United States and Great Britain, and have been taken in most of the countries of continental Europe at different dates. From the rest of the world no statistics have yet been procured. The data thus obtained in Europe and America give ground for the surmise that deafness is more prevalent in cold than in hot countries, and among the Caucasian than among other races. The following will serve as instances of the differences in the proportion of deaf mutes to the total population:

COUNTRIES.	Date.	Proportion, 1 in
Switzerland: Aargau	1836	189
" Vaud	1836	1,112
Sardinia	1834	769
Norway	1835	977
Sweden	1840	1,528
Denmark	1834	1,942
Holland	1833	2,000
Belgium	1835	2,226
Luxemburg	1835	2,295
Prussia	1849	1,364
France	1853	1,212
Ireland	1861	1,176
Scotland	"	1,311
Isles in British seas	"	1,649
England	"	1,640
"	1871	1,971
United States	1830	1,954
" "	1840	2,123
" "	1850	2,152
" "	1860	2,276
" "	1870	2,380

The true proportion, in the United States and Great Britain, is probably 1 in 2,000; the older estimates made it 1 in 1,600; and 1 in 1,500 may be taken as the average of the United States and Europe. Some of these discrepancies are doubtless due to the errors and omissions which have been detected in even the latest and most carefully taken censuses. Thus in 1870, out of 294 pupils in the Illinois institution, only 97 were enumerated. The two following tables show the numbers recorded in the United States census of 1870, and the proportions deduced thence; to which, for comparison, is added the number of pupils reported by the various institutions during the same year:

NUMBER OF THE DEAF AND DUMB IN THE UNITED STATES AND TERRITORIES, 1870.

STATES.	Proportion, 1 in	Total.	Male.	Female.	White.	Colored.	Of school age, 5 to 20.	At school.
Maine	1786	351	186	165	351	..	125	59
New Hampshire	1720	188	103	85	188	..	54	15
Vermont	1979	167	89	78	167	..	56	15
Massachusetts	2238	656	376	280	651	5	313	198
Rhode Island	3061	71	47	24	69	2	28	5
Connecticut	2431	221	117	104	217	4	84	53
New York	2447	1783	984	799	1768	15	748	613
New Jersey	3921	277	145	132	268	9	119	50
Pennsylvania	2441	1433	777	656	1425	8	654	193
Delaware	2049	61	34	27	54	7	15	7
Maryland	1845	384	229	155	311	73	198	88
Dist. of Columbia	982	134	92	42	108	26	70	100
Virginia	2294	534	298	236	401	133	222	100
West Virginia	2044	218	125	93	214	4	79	22
North Carolina	1730	619	358	261	442	177	289	120
South Carolina	3328	212	118	94	122	90	103	27
Georgia	3632	326	168	158	237	89	155	57
Florida	3911	48	29	19	32	16	30	..
Alabama	2436	401	205	196	262	139	180	55
Mississippi	3469	245	145	100	134	111	99	..
Louisiana	3689	197	105	92	154	43	73	31
Texas	3528	232	146	86	185	47	110	35
Kentucky	1827	723	365	358	634	89	320	79
Tennessee	2207	570	304	266	476	94	243	99
Missouri	2178	790	389	401	751	39	436	176
Arkansas	1828	265	142	123	236	29	132	36
Ohio	1987	1339	709	630	1323	16	653	343
Indiana	1927	872	467	405	865	7	468	246
Illinois	3049	833	484	349	823	10	417	293
Michigan	2602	455	258	197	454	1	207	147
Wisconsin	2079	459	276	183	459	..	280	141
Iowa	2174	549	315	234	548	1	257	115
Minnesota	2642	166	99	67	165	1	110	65
Nebraska	2235	55	22	33	55	..	24	21
Kansas	3011	121	72	49	114	7	61	50
California	3973	141	79	62	139	2	97	59
Oregon	3953	23	13	10	22	1	11	..
Nevada	10622	4	2	2	4	..	4	..
Dakota	3545	4	2	2	4	..	3	..
Montana	4119	5	1	4	4	1	2	..
Wyoming	4559	2	2	..	1	1	1	..
Idaho	14999	1	1	..	1	..	..	..
Colorado	9966	4	1	3	4	..	3	..
Utah	4821	18	4	14	18	..	9	..
New Mexico	1914	48	30	18	48	..	16	..
Washington	3992	6	3	3	5	1	4	..
Arizona	..	..	..	..	..	..	..	..
Total	2380	16205	8916	7289	14907	1298	7562	3717

AGES OF THE DEAF AND DUMB IN THE UNITED STATES AND TERRITORIES, 1870.

AGE.	Total.	Male.	Female.	White.	Col'd.	Indian.
Unknown	55	21	34	54	1	..
Under 1	12	6	6	12	..	..
1–5	395	206	189	354	46	..
5–10	2,051	1,168	883	1,891	187	..
10–15	3,037	1,634	1,403	2,820	246	2
15–20	2,560	1,406	1,154	2,418	165	1
20–30	3,211	1,810	1,401	2,999	252	..
30–40	1,845	1,025	820	1,724	146	3
40–50	1,270	710	560	1,181	99	1
50–60	924	522	402	855	79	..
60–70	574	283	291	543	37	..
70–80	213	105	108	191	24	..
80–90	47	18	29	43	4	..
90–100	9	2	7	6	3	..
100 and over	2	..	2	..	2	..
Total	16,205	8,916	7,289	14,907	1,291	7

The numbers for England, the only ones yet received from the census of 1871, were kindly furnished by the registrar general through Dr. Buxton of Liverpool, in advance of publication, and are liable to slight changes. The decrease in 10 years, on the whole, and in every district but three, is remarkable; it amounts to 6·23 per cent., while the total population increased 13·15 per cent.

NUMBER OF THE DEAF AND DUMB IN GREAT BRITAIN AND IRELAND.

DISTRICTS.	1851.	1861.	1871.
England and Wales.			
I. London	1,325	1,819	1,733
II. Southeastern	836	1,022	965
III. S. Midland	649	789	672
IV. Eastern	669	729	635
V. Southwestern	1,295	1,321	1,097
VI. W. Midland	1,325	1,613	1,466
VII. N. Midland	694	748	682
VIII. Northwestern	1,237	1,582	1,677
IX. Yorkshire	1,042	1,222	1,226
X. Northern	471	577	626
XI. Wales and Monmouthshire	771	814	739
Total England and Wales	10,314	12,236	11,518
Scotland	2,155	2,335	returns not receiv'd
Ireland	4,747	4,930	
Isles in British seas	84	87	
Grand total	17,300	19,688	....

In Europe congenital cases preponderate, in America adventitious cases, as is shown in the following comparison:

	Congenital.	Adventitious.	Unknown.	Total.
4 British institutions	3,288	912	....	4,200
7 American "	1,401	1,983	400	3,784

The following table shows the ages at which deafness occurred in 2,472 cases in the United States, and in 1,458 cases in Europe:

AGE.	United States.	Europe.
Under 1 year	485	140
Between 1 and 2 years	680	335
" 2 and 3 "	448	295
" 3 and 4 "	229	226
" 4 and 5 "	196	125
" 5 and 6 "	137	87
" 6 and 7 "	98	91
" 7 and 8 "	79	87
" 8 and 9 "	32	20
" 9 and 10 "	22	21
" 10 and 15 "	41	50
" 15 and 21 "	7	12
Total	2,472	1,458

—*Causes of Deafness.* The causes of deafness are both ante-natal and post-natal. Ante-natal causes produce not merely congenital deafness, but also gradual decay of hearing, or a weakness in the organ predisposing it to yield to a slight attack. The most obvious and incontestable of these are the consanguinity of parents and hereditary transmission. Dr. Bemiss of Louisville, Ky., on investigating 833 consanguineous marriages, found that of the 3,942 offspring 1,134 were defective, of whom 145 were deaf and dumb; and estimated that 10 per cent. of the deaf in the United States sprang from kindred parents. Dr. Buxton of Liverpool found the same percentage in Great Britain, and met with as many as eight deaf children from such a union. The prevalence of deafness as well as of idiocy, cretinism, and goitre, in mountainous districts (the deaf amounting at one time to 1 per cent. of the total population in part of the canton of Vaud, Switzerland), must be partly due to the intermarriages in a secluded and stationary population; and the less proportion of congenital to adventitious cases in the United States than in Europe, to the free intermixture of races here. Hereditary transmission is less common than is often believed. According to the computations of Dr. H. P. Peet of New York, the probability of deafness occurring in the offspring of parents who are deaf from adventitious causes is 1 in 1,600, or in the same proportion as when both parents are hearing; but when one parent is congenitally deaf, the chances in the offspring are as 1 to 130; and when both parents are congenitally deaf, the chances are that 1 in 10 of the offspring will be deaf. Influences acting on the imagination of the mother are often assigned as causes of deafness; but inquiry seldom fails to reveal other and adequate ones. Congenital deafness occurs among all ranks and nationalities. The most prominent post-natal causes are scarlet fever, scrofulous and syphilitic affections, and spotted fever or cerebro-spinal meningitis. In the United States, scarlet fever has since 1830 been most fruitful, producing 20 to 25 per cent. of the total cases; spotted fever, after subsiding for a period, has within the past ten years commenced an era of fresh virulence, especially in the western states; scrofulous traces have been observed in from 30 to 75 per cent. of the inmates of various institutions. Added to these causes from disease are those produced by mechanical injury. The following table is compiled from the statistics of the New York, Pennsylvania, Kentucky, Ohio, Virginia, Indiana, Illinois, and Minnesota institutions, generally embracing the whole period of their existence:

CAUSES OF DEAFNESS.

I. *Affections acting locally on the organ of hearing.*		Fever, spotted	149
Scarlet fever	460	Fever, typhus and typhoid	82
Measles	92	Fever, intermittent	32
Smallpox	4	Fever, bilious and gastric	15
Other exanthemata	18	Fever, yellow	1
Diseases of the ear	10	Fever, not specified	116
Diseases of the throat and lungs	38	Falls	36
Scrofula and rickets	32	Quinine and mercury	16
Glandular diseases	111		880
	765	III. *Doubtful.*	
II. *Affections acting on the brain and nervous system.*		Colds and rheumatism	89
Brain fever, inflammation, and congestion	219	Cholera, dysentery, &c.	15
Spinal and nervous diseases	21	Various diseases	27
Fright and convulsions	48	Various accidents	57
Whooping cough	56	Sickness or accident not specified	198
Teething	14	Gradual decay	2
Dropsy of the brain	25		388
		Total	1,983

—Deafness is generally incurable. When it comes on gradually, it may be arrested by prompt surgical care, and assiduous cultivation of the habits of attention to sounds and of speech, which are liable to decay; but the most distinguished aurists unite in acknowledging its higher degrees to be beyond their art. Attention should rather be directed to its prevention. Congenital deafness, when the result of consanguinity in the parents, is often associated with other bodily and mental infirmities; and the maladies or accidents causing adventitious deafness often leave serious effects on the general system. But the mortality among the deaf does not appear to be appreciably greater than among others; on the contrary, the health record of the American institutions is in general remarkably fair.—*History of Deaf-Mute Education.* In the earliest ages mention is made of the deaf, but they were considered incapable of receiving education. The Mosaic law merely protected them from wanton insult; the ordinances of the pundits excluded them from inheritance, but imposed their support on the next heir. At Rome a distinction is found in various laws in favor of those who were not congenitally deaf, and who could write; these were allowed full civil rights, from which all other deaf persons were in a measure excluded. This principle was retained in the code of Justinian, which placed the latter class under guardianship and deprived them of all power to alienate their property. The governments founded on the ruins of the Roman empire preserved its regulations. The very nature of the feudal system made necessary the disqualification of the deaf from inheritance. As late as the time of Elizabeth, Richard, eldest son of the viscount Buttevant in Ireland, was excluded from the succession by reason of his being deaf and dumb. As Sir William Hamilton says, "The dictum of Aristotle, that of all the senses hearing contributes the most to intelligence and knowledge, was alleged to prove that the deaf are wholly incapable of intellectual instruction." St. Augustine, in the 4th century, declared that deafness made faith impossible, since he who was born deaf could not learn the letters by reading which he might acquire faith. Yet Pliny mentions that Quintus Pedius, a relative of Augustus, though deaf from birth, attained to great proficiency in painting. The next attempt to educate the deaf and dumb is that recorded by the Venerable Bede (died 735) of his contemporary, St. John of Beverley, bishop of Hagulstadt (now Hexham), in Northumberland, who taught a dumb man to speak by making the sign of the cross over him. Bede also described a manual alphabet in his *De Loquela per Gestum Digitorum*, first printed at Ratisbon in 1532, the plates in which are probably the earliest illustrations of dactylology extant. Rudolphus Agricola, of Heidelberg (died 1485), in his *De Inventione Dialecticæ*, said he had seen an individual deaf from birth who could converse in writing. This was called in question 50 years later by L. Vives, a Spaniard, but only on the ground of its inherent impossibility. Platerus mentioned a deaf man at Basel about 1530, who could do the same, and attended the preaching of the reformer Œcolampadius, following the motions of his lips. The impulse given to literary and scientific research about this time led to investigation not only of the philosophy of thought and language, but also of the mechanism of hearing and speech, and the classification and mode of formation of sounds. One of the most brilliant and versatile minds of the age, Jerome Cardan of Pavia (1501–'76), turned his attention to the condition of the deaf, and enunciated this most important principle: "Writing is associated with speech, and speech with thought; but written characters and ideas may be connected together without the intervention of words;" and thence declared that "the instruction of the deaf and dumb is difficult, but it is possible." The first systematic attempt to teach the deaf and dumb was made by Pedro Ponce (died 1584), a Benedictine monk of Sahagun in Spain. He taught the two sons of De Velasco, a Castilian noble, and several others, to read and write Spanish and Latin, and to understand Greek and Italian. One of his pupils, he says, received the order of priesthood, possessed a benefice, and performed the duties of his office in reciting his breviary. A contemporary medical writer records that Ponce "employed no other means than first instructing them to write, then pointing out to them the objects signified by the written characters, and finally exercising them in the repetition by the vocal organs of the utterances which correspond to the characters;" and Morales says his pupils could both speak and read on the lips with fluency. Contemporary was a second deaf artist, Juan Fernandez Navarrete, surnamed El Mudo, and called "the Titian of Spain," a title which the anecdotes of him show was well merited. Half a century later another monk, Juan Pablo Bonet, secretary to the constable of Castile, taught a brother of his patron, who had become deaf at the age of two. This young man was introduced to Charles I. of England, during his trip in Spain while prince of Wales, in 1623. Sir Kenelm Digby, who attended the prince, declared that he could speak as distinctly as any man whatever, and understand a whole day's conversation, even though the speaker were at a considerable distance; and also that he imitated correctly the pronunciation of words in strange languages, Irish and Welsh, on merely seeing them uttered. Bonet wrote the first formal treatise on the instruction of the deaf, *Reduccion de las letras y artes para enseñar á hablar á los mudos* (Madrid, 1620). He gives clear rules for teaching articulation, but considers lip-reading an accomplishment depending entirely on the pupil's quickness of sight. He relied on gestures to explain the meaning of

such words as were not the names of visible objects, and made much use of a manual alphabet, engraved in his book, almost precisely the single-hand alphabet now in use. His views on teaching language are sound and philosophical. Another Spaniard, E. R. de Carrion, in the early part of the 17th century, taught among others Emanuel Philibert, prince of Carignan, to write and speak four languages. The honor of the first three practical teachers of the deaf thus belongs to Spain. About 1604 St. Francis de Sales took into his house a deaf-mute youth, and taught him the doctrines of the church; he died of grief shortly after his benefactor's decease. In Italy great attention was paid to the anatomy of the ear, the physiology of speech, and phonology, especially by Eustachius (1563) and Fabricius of Padua, the latter of whom is said, in addition to preparing various scientific treatises (1600–'13), to have practised the instruction of the deaf. Treatises on the language of gesture also appeared, but without particular reference to the deaf. The padre Lana Terzi, in his *Arte maestra* (1670), maintained the possibility of educating both the blind and the deaf, "since the privation of one sense gives to the others a keenness entirely new and extraordinary," and sketched a graduated course for teaching the latter first articulation and then the meaning of words.— In England, Sir Kenelm Digby gave an account of Bonet's pupil in his "Treatise on the Nature of Bodies" (1646), which was copied in Dr. John Bulwer's *Philocophus* (1648). Bulwer maintained that "a man born deaf and dumb may be taught to hear the sound of words with his eye, and thence learn to speak with his tongue." He had in his "*Chironomia*, or the Natural Language of the Hand" (1644), mentioned a gentleman in Essex who, becoming deaf by sickness, devised an "arthrologie, or alphabet contrived on the joints of his fingers;" but he did not perceive its applicability in education, nor does he appear ever to have reduced speculation to practice. The first man in England who did this was John Wallis, D. D., professor of geometry at Oxford, and a correspondent of Digby. He began in January, 1661, to teach a youth named Whaley, who became deaf at about five years of age, "to speak and to understand a language." The boy was exhibited before the royal society in May, 1662, and was found able to express himself, "though not elegantly, yet so as to be understood." Wallis afterward took other pupils, one of whom, Popham, having previously received some instruction from the Rev. W. Holder, as related in his "Elements of Speech" (1669), occasioned a controversy, in 1678, as to the credit due to each. Wallis's system is detailed in two letters in the "Philosophical Transactions of the Royal Society," one to Boyle, dated March, 1662, published July, 1670, and the other to Beverly, dated Sept. 30, published in October, 1698; and in one to Amman, 1699. It is also mentioned in the preface to the *Tractatus de Loquela* prefixed to his *Grammatica Linguæ Anglicanæ*, beginning with the 4th edition (1674). He considered articulation and understanding language as very different parts of the task, and the former as really the less difficult and wonderful, and useless without the latter. With his later pupils he did not attempt articulation. As to lip-reading, he agreed with Bonet, and declared that "there is nothing in the nature of the thing itself why letters and characters might not as properly be applied to represent immediately, as by intervention of sounds, what our conceptions are." The letter to Beverly gives his classification and order of teaching a vocabulary. Among Wallis's literary friends was George Dalgarno of Aberdeen, master of a grammar school at Oxford, who published in 1661 *Ars Signorum*, an essay on a universal language, containing the germs of Wilkins's "Real Character;" and in 1680 "*Didascalocophus*, or the Deaf and Dumb Man's Tutor." Both lay in undeserved neglect till 1834, when the encomiums of Dugald Stewart led to their reprint by the Maitland club of Edinburgh. Stewart and Sir William Hamilton thought Wallis was indebted to Dalgarno for much in his later statements of his system; but the main features are detailed in the earlier with sufficient precision to leave the question of originality at least doubtful. There can be no doubt as to the merits of Dalgarno's work. It displays a just appreciation of the condition of the deaf, and great sagacity in dealing with it. The manual alphabet devised by Dalgarno is the basis of the present two-hand British alphabet. Wallis, however, was alone the guide of the subsequent British laborers. His method was first popularly made known in Defoe's "Life of Duncan Campbell" (1720), a Scotch adventurer, who represented himself as having become deaf at an early age, and having been educated by an acquaintance of Wallis; and whose pretensions to the gift of second sight are mentioned in the "Tatler" and "Spectator." Defoe's son-in-law, Henry Baker, the microscopist, taught a considerable number of deaf mutes, belonging to the highest families, to speak and read on the lips, but he never published his method. Dr. Johnson alludes to Baker in a notice of a visit to the establishment of Thomas Braidwood, at Dumbiedikes, near Edinburgh. This was the first regular school for deaf mutes in Great Britain. From it are descended in unbroken succession the existing British public institutions, the oldest and largest of which, that at London, has from the first taken its principal from Braidwood's family. Braidwood, who had an establishment for the cure of stammering, in 1760 undertook to carry into effect with a deaf youth the plan given by Wallis in the "Philosophical Transactions." His success attracted other pupils, but he never had a larger number than could receive constant individual attention from himself or the

members of his family whom he had trained to assist him; and he would disclose his methods to no one else, except on very exorbitant terms, a policy which was adhered to by his family. From scattered notices it has been gleaned that articulation and lip-reading were his main objects, and the manual alphabet was employed; but no trace is found of his using signs. He was a diligent student of previous writers, and a remarkably skilful and devoted teacher. The fullest account of his school is *Vox Oculis Subjecta* (London, 1783), by Francis Green, of Boston, Mass., who had a son there. This work abounds in quotations from Amman, Holder, Wallis, and others. It was written to promote the establishment of a national institution in London, whither Braidwood had just removed; but the project failed. After Braidwood's death, his school was continued by his widow and grandchildren till 1816, when the family were scattered. The Braidwoods received a few indigent pupils gratuitously, but their terms were generally high; and the establishment of the first free public school was due to an entirely different and independent agency. The benevolent and public-spirited Rev. John Townsend (also one of the founders of the London missionary society, and of the British and foreign Bible society), having his sympathies excited by some deaf children in the crowd coming to his door for charity, made inquiries which resulted in the discovery of so many similarly afflicted, that he set about the establishment of a school for them. To enlist aid, he travelled thousands of miles in England, and in 1792 opened a school in Bermondsey, Surrey, which in 1807 was removed to its present site on the Old Kent road, assuming the name of the London asylum. Its first head master was a nephew of Braidwood, Joseph Watson, who received the degree of LL. D. from the university of Glasgow in recognition of the value of his treatise, "The Instruction of the Deaf and Dumb," and his illustrated "Vocabulary" (1809–'10). His son and grandson succeeded in turn to his position. The London asylum has always been open to pupils from all parts; but it soon proved inadequate. A grandson and namesake of Braidwood was in 1810 invited to Edinburgh to start a school, but within a year it was placed in charge of Mr. Kinniburgh, who had been trained by the Braidwoods. At Birmingham an institution was established in 1812, through the efforts of Dr. De Lys; and one at Dublin in 1816, by Dr. C. H. Orpen. Others soon followed.—In Germany, the first efforts made were by a contemporary of Ponce, Joachim Pasch of Brandenburg, who taught his own daughter by means of pictures and signs. Early in the 17th century Camerarius and Schott allude to deaf mutes having been educated, but they were mostly such as had become deaf late in life. Much attention, as in Italy, was early paid to the theory and mechanism of speech; translations of Fabricius, Bulwer, and Holder appeared, and were followed by many original philosophical and medical essays; but very few actually attempted the education of the deaf, and each taught only a very limited number. In Holland, Peter Montanus published in 1635 a treatise on phonetics, remarkable for accuracy and minuteness; and in 1660 A. Deusing of Groningen issued an essay, *De Surdis ab Ortu*, entirely occupied with reasoning and theories, which ten years later was translated into English under the title, "The Deaf and Dumb Man's Discourse," by George Sibscota. In 1667 F. M. van Helmont, brother of the celebrated chemist, published *Alphabeti Naturalis Delineatio*, an attempt to prove that Hebrew was the natural and divinely given language of mankind, by showing that the Hebrew characters bore an exact resemblance to the positions of the vocal organs in uttering the corresponding sounds. He maintained that in this language a deaf mute could not only read on the lips, but could even teach himself the exact pronunciation, simply from study of the characters. The man usually considered the founder of the German system was Johann Konrad Amman, a Swiss physician at Haarlem. Meeting a girl deaf from birth, he taught her articulation, and published an account of the process, under the title *Surdus Loquens* (1692). Not until seven years after did he hear of Wallis's efforts. An appreciative letter was addressed him by the Englishman, and was prefixed, with his reply, to the second edition of his work, which was enlarged and renamed *Dissertatio de Loquela* (1700). His writings were translated into English, German, and French, and long exerted a very powerful influence, though few if any now hold his mystical view of the divine efficacy and absolute essentialness of speech. Next was Kerger, a Silesian (1704), who, while disclaiming originality in his methods, was the first on the continent to make articulation subordinate to signs. O. B. Lasius (1715), in teaching several deaf mutes, sought to reduce the art to the utmost simplicity, and to establish a direct association of ideas with written words. He used neither articulation, signs, nor dactylology. G. Raphel of Lüneburg (1718) taught his three deaf daughters, following Amman except in giving the highest place to writing. Arnoldi (1777) used freely such signs as his pupils devised, but did not invent any himself. Simultaneously with the opening of Braidwood's school commenced the labors of Samuel Heinicke (1729–'90), founder of the first public institution in Germany. While a private soldier at Dresden (1754), he became interested in a deaf and dumb boy, whom he attempted to instruct. After receiving his discharge, and studying at Jena, he went to Hamburg, where in 1758 he found another deaf child, whom he likewise began to teach, and gradually others came to him. About 20 years later the reports of his success induced the elector of Saxony to invite him to Leipsic, and install him as the

head of the first public school ever established open to all classes and supported by the government. The ignorance of the friends of his first pupils made writing unavailable as a means of communication, and Amman's book falling into his hands, he eagerly adopted its principles. Holding that thought is impossible save through the medium of spoken words, he declared that all means of instruction besides articulation were utterly insufficient for mental culture; and he carried on a controversy with De l'Épée, the originator of the French system. His native talents and force of character insured him eminent success, though his mode of operation was not materially different from that employed by his predecessors. One of his sons-in-law, Reich, succeeded him at Leipsic; another, Eschke, established the school at Berlin, and his own son one at Crefeld. The great majority of teachers in Germany being trained in his system, it long reigned almost supreme in that country.—France was the last of the leading European nations to engage in this work. As late as the commencement of the 17th century a Père Dumoulin denied its possibility. But in 1679 a decree of the parliament of Toulouse declared valid the will of one Guibal, a congenital deaf mute, written by his own hand. No traces of his instructor have been found; and of several persons alleged to have taught the deaf, little has come down besides names and places. The first to attract public attention was Jacob Rodriguez Pereira, a Portuguese Jew, grandfather of the eminent financiers. He began teaching in 1743, and gave exhibitions before the academy of sciences in Paris in June, 1749, and January, 1751; but even the flattering reports made by committees of the academy failed to obtain from the government the liberal payment he demanded for making public his method, which he kept a profound secret, excluding even his family from all knowledge of it. Not till long after his death was it divulged by his pupil Saboreux de Fontenai. The first 12 or 15 months were devoted to acquiring a correct pronunciation, the meaning of only a few simple expressions being given; this once attained, he proceeded to impart a general command of language. He made great use of a syllabic dactylology based on 30 fundamental positions of the fingers, designed to indicate the position of the vocal organs in uttering the sounds. This formed a very rapid means of communication. The sense of words was impressed by frequent repetition in different connections, signs being used only at the very first. Ernaud (1762) appears to have been a mere imitator of Pereira, and less successful. The Abbé Deschamps of Orleans, who in 1779 published a *Cours d'éducation*, devoted his whole life and fortune to the deaf and dumb, receiving indigent pupils gratuitously. His preference for articulation defeated all efforts to induce him to unite with De l'Épée. Thus far articulation had been with all the chief object of instruction, and with some the chief means. Very little use had been made of the gestures by which the uneducated deaf naturally express their desires and feelings. Diderot's *Lettre sur les sourds et muets* (1751), indeed, eulogized pantomime as a means of communication; but to test its capabilities fully and practically was reserved for the abbé de l'Épée. In 1755, while living in Paris a life of literary leisure, this benevolent ecclesiastic chanced upon two deaf young women. Their education had been begun by Père Vanin, who had been the instructor of Pereira's favorite pupil De Fontenai; but his death left it barely commenced. Their deplorable condition strongly excited the compassion of De l'Épée, and he undertook to become their preceptor. Discovering others of the class, he devoted himself to the work, confining his attention to the poor. Like Deschamps, he gave his whole fortune to his pupils. He welcomed public notice and the visits of distinguished personages, for the sake of winning friends for the deaf; and unlike most previous teachers, who had made a mystery and a monopoly of their art, he desired nothing more earnestly than to train up suitable persons to extend and continue the work. Joseph II. of Austria offered him the revenues of an estate; he besought instead that he would establish a school for the deaf. De l'Épée at first followed Vanin in teaching by means of pictures, but soon found that they produced extremely incorrect impressions. He next tried articulation, but was disheartened by the slow and unsatisfactory progress made. Suddenly bethinking himself that the connection between ideas and spoken words was purely arbitrary, he surmised that an association could be equally well established between ideas and written words. He observed also that the deaf possessed already a means of communication in gestures, and considered that to teach them one of our conventional languages would be merely a process of translation from this natural language, when it had been philosophically improved and expanded into an exact correspondence with the other. Upon these principles he proceeded, and successfully. De l'Épée died in 1789, and was succeeded by the abbé Sicard, then at the head of the school at Bordeaux. Sicard was a man of less philanthropic and disinterested character than his master, but of keener and more philosophical intellect, and better fitted to push the claims of his establishment for adoption by the government, which it received in 1791. During the revolution his priestly character placed him in great peril; and during Napoleon's hundred days his Bourbon sympathies made it expedient for him to repair to England, where the performances of his favorite pupils and assistants, Massieu and Clerc, excited the greatest astonishment. Sicard, while preserving in the main the system of De l'Épée, improved it in many important respects. By an analytical system of visible illustration he made the principles of grammar

familiar. His *Cours d'instruction*, under the guise of an account of his method with Massieu, develops his principles and processes; it reads like a philosophical romance. He was the "painter of syntax and the poet of grammar." His *Théorie des signes* is an ideological vocabulary, with descriptions of pantomime ingeniously devised to express the full sense of each word, sometimes accompanied by less tedious abridgments for common use. Since his death, in 1822, the Paris institution has suffered at times from directors utterly ignorant of the art, but has preserved much of its prestige. Its physicians, Itard, Menière, and Blanchet, have done much for aural surgery. The first named founded in 1838 a *classe de perfectionnement* for the higher education of select pupils, which was the first step made in any institution beyond the primary branches. The baron de Gérando, a member of its council of administration, was the author of a valuable history of the art and of a sketch of methods, entitled *De l'éducation des sourds-muets* (1827). The introduction of deaf-mute education into the other countries of Europe was in general effected by persons trained by Heinicke or De l'Épée, or by their disciples, and presents little of general interest.—In America, as early as 1793, appeared an essay "On Teaching the Deaf to Speak," by Dr. W. Thornton of Philadelphia. In 1811 one of Braidwood's grandsons attempted to establish a school, first at New York and then in Virginia; but he was unsuccessful. Finally, an inquiry into the number of the deaf and dumb in Connecticut was made by Dr. M. F. Cogswell of Hartford, whose daughter having become deaf, he was hesitating whether to send her abroad. Discovering an unexpectedly large number, he enlisted the coöperation of several other gentlemen of Hartford in the project of establishing a school there. One of these, the Rev. T. H. Gallaudet, seemed pointed out for the active initiation of the work by his rare talent, force of character, tact, and amiability, and deep religious feeling. Accepting the duty, he embarked on May 25, 1815, for England, to acquire the art of instruction. Both at London and at Edinburgh the exorbitant terms imposed by the Braidwood-Watson family repelled him; and having met Sicard and his pupils in London, he finally accepted their invitation to Paris. Here he received every facility and assistance; and on his return in August, 1816, he prevailed upon Laurent Clerc, one of Sicard's most distinguished pupils and most valued associates, to accompany him. On April 15, 1817, the Connecticut asylum was opened at Hartford with seven pupils, and within a year had 33. Congress soon made it a donation of a township of wild land, the proceeds of which now form a fund of $339,000; in acknowledgment, the name of the school was changed to the American asylum, it being expected that it would suffice for the whole country for a long period. But other schools were soon called for, and the asylum has long been practically limited to the New England states. Gallaudet remained at its head for many years, and when he was compelled by ill health to retire his warm interest and influence were felt until his death in 1851. A monument was erected to his memory by contributions of the deaf and dumb throughout the country, and from designs by the deaf-mute artists, Newsam and Carlin. Two of his sons have devoted themselves to the same work, the Rev. T. Gallaudet, D. D., of New York, and E. M. Gallaudet, LL. D., of Washington. The New York institution was chartered on the very day the Hartford asylum was opened. At first Watson's book was taken as the guide, and articulation was taught, but with such unsatisfactory results that in 1830 a thorough reorganization was effected, and two teachers were obtained from Paris and Hartford to introduce the French system. The French teacher, M. Léon Vaïsse, after four years returned to Paris; the other, Harvey P. Peet, LL. D., served as principal from 1831 to 1867, and built up the institution into the largest and one of the most efficient in the world. His name is worthily borne by his son and successor, Isaac Lewis Peet, LL. D. This institution has had among its professors many men since eminent in other walks of life. The Pennsylvania institution was started in 1820 by Joseph Seixas, but its system was soon remodelled by Clerc. The Kentucky institution was established in 1823 by J. A. Jacobs, who devoted to it a life of rare benevolence. Other schools rapidly followed. In the United States, the deaf mute is regarded as entitled to a share in the free school system, as fully as his hearing brothers and sisters. The state, finding it neither economical nor convenient to educate him, as it does them, in the nearest public school, sends him to a special institution adapted to his necessities; but he is not therefore to be considered a charity pupil. Provision for the education of the deaf is made by legislative enactment in every state except perhaps Nevada, and by the general government in the District of Columbia, and in behalf of those whose fathers are in the army and navy. Most of the institutions are controlled by trustees appointed by the state; a few are private corporations, mostly, however, deriving their entire income from annual legislative appropriations. The term of instruction allowed is very generally seven years; and high classes have been established, beginning at Hartford and New York in 1852, and now existing also in the Ohio, Illinois, Indiana, and District of Columbia institutions. The Columbia institution at Washington in 1864 obtained from congress a collegiate charter, and has graduated 19 young men with the degree of B. A. and 1 with that of B. S. In Canada, the first school was opened at Montreal in 1848, by the Roman Catholics; there are now five schools, of which that at Belleville, Ontario, is under government control. —In nearly all the American institutions an im-

proved French or manual system is employed; most give more or less instruction in articulation, a special teacher being employed in some. Several of those lately established make articulation a specialty, viz., those at Northampton and Boston, the New York institution for improved instruction, and Whipple's private school. The controversy as to the relative value of the two systems was opened in 1844 by Horace Mann and Dr. S. G. Howe, and has been carried on ever since. It has occasioned numerous visits to and reports on the leading European schools. The most important reports are those by Lewis Weld (1844), the Rev. G. E. Day (1844 and 1859), H. P. Peet (1851), the Rev. E. Ryerson (1867), E. M. Gallaudet (1867), and Miss H. B. Rogers (1872). Both boys and girls are trained to habits of industry by assisting in household duties. Wherever the resources permit, instruction is given in mechanical arts. The following table gives statistics for the year 1872:

INSTITUTIONS FOR THE DEAF AND DUMB IN THE UNITED STATES AND CANADA.

NAME.	LOCATION.	Date of opening.	PUPILS.				TEACHERS.					TRADES.
			Total.	Male.	Female.	Semi-mute.	Total.	Male.	Female.	Deaf-mute.	Semi-mute.	
American asylum	Hartford, Conn	1817	290	179	111	17	17	10	7	3	2	Cabinet m., shoe m., tailoring.
New York institution	New York, N. Y	1818	588	349	239	42	30	19	11	7	9	Cabinet m., shoe m., tailoring, painting, glazing, gardening.
Pennsylvania institution	Philadelphia, Pa	1820	262	137	125	32	14	11	3	3	..	Shoe making, tailoring.
Kentucky "	Danville, Ky	1823	87	47	40	..	6	..	..	..	..	Gardening.
Ohio "	Columbus, O	1829	388	225	163	30	22	8	14	9	3	Shoe m., printing, book bind'g.
Virginia "	Staunton, Va	1830	89	47	42	5	7	7	..	3	1	Cabinet m., shoe m., tailoring, printing in raised letters for the blind, book-binding.
Indiana "	Indianapolis, Ind	1844	304	167	137	..	14	8	6	3	3	Cabinet m., shoe m., tailoring.
Tennessee school	Knoxville, Tenn	1845	103	59	44	9	8	8	..	2	1	None.
North Carolina institution	Raleigh, N. C	1845	119	67	52	8	9	7	2	3	1	Shoe making.
Illinois "	Jacksonville, Ill	1846	309	165	144	25	16	9	7	3	2	Cabinet m., wood turning, painting, glazing, shoe m., printing, farming.
Georgia "	Cave Spring, Ga	1846	61	27	34	8	5	4	1	1	1	Shoe making.
South Carolina "	Cedar Spring, S. C	1849	22	11	11	3	3	2	1	2	..	Carpentering, shoe making.
Missouri asylum	Fulton, Mo	1851	186	90	96	14	8	4	4	3	..	None.
Louisiana institution	Baton Rouge, La	1852	54	34	20	4	4	4	..	1	1	Printing.
Wisconsin "	Delavan, Wis	1852	164	92	72	5	10	8	2	2	1	Cabinet making, shoe making.
Michigan "	Flint, Mich	1854	159	87	72	25	11	9	2	6	2	Cabinet making, shoe making.
Iowa "	Council Bluffs, Iowa	1855	131	72	59	14	7	5	2	3	..	None.
Mississippi "	Jackson, Miss	1856	42	25	17	5	3	3	..	1	1	Not reported.
Texas "	Austin, Texas	1857	30	20	10	..	3	2	1	..	..	None.
Columbia inst. (primary dep.)	Washington, D. C	1857	50	34	16	3	3	2	1	1	1	Cabinet making, gardening.
Alabama institution	Talladega, Ala	1858	59	19	40	..	4	3	1	3	..	None.
California "	Oakland, Cal	1860	60	35	25	5	4	4	..	1	1	Cabinet m., shoe m., gardening.
St. Bridget's inst. (Rom. Cath.)	St. Louis, Mo	1860	11	..	11	..	2	..	2	1	..	Dress making.
Kansas institution	Olathe, Kansas	1862	69	43	26	9	5	4	1	1	..	None.
St. Mary's asylum (Rom. Cath.)	Buffalo, N. Y	1862	58	27	31	4	6	1	5	2	..	Carpentering, gardening, cane work, dress making, knitting.
Minnesota institution	Faribault, Minn	1863	60	36	24	7	5	3	2	1	..	Cooperage, farming.
Inst. for improved instruct'n.	New York, N. Y	1867	80	38	42	22	7	1	6	..	..	None.
Clarke institution	Northampton, Mass.	1867	60	32	28	20	5	..	5	..	..	None.
Arkansas "	Little Rock, Ark	1867	68	37	31	5	5	2	3	2	..	Shoe making, gardening.
Maryland "	Frederick City, Md	1868	102	65	37	..	9	5	4	2	2	Shoe making.
Nebraska "	Omaha, Neb	1869	26	12	14	4	3	1	2	..	1	Printing.
Pittsburgh day school	Pittsburgh, Pa	1869	43	23	20	7	2	1	1	1	..	None.
Boston "	Boston, Mass	1869	55	22	33	10	4	..	4	..	..	None.
Whipple's home school	Mystic, Conn	1869	4	2	2	1	2	1	1	..	..	None.
West Virginia institution	Romney, West Va	1870	56	35	21	9	4	2	2	1	..	None.
Oregon "	Salem, Oregon	1870	24	13	11	6	2	1	1	1	..	None.
National deaf-mute college	Washington, D. C	1864	67	67	..	20	8	8	..	..	2	None.
Total in 36 institutions in the United States		....	4340	2440	1900	378	277	167	104	72	35	
Montreal R. C. inst., male	Montreal, Quebec	1848	75	75	..	..	9	9	..	3	..	Cabinet m., shoe m., printing, book binding, farming.
" " " female	" "	....	..	..	..	..	..	..	..	..	..	
Halifax institution	Halifax, Nova Scotia	1857	46	30	16	2	3	3	..	1	..	Gardening.
Ontario "	Belleville, Ontario	1870	149	97	52	13	8	6	2	2	..	Cabinet m., carpentering.
Montreal Protestant inst.	Montreal, Quebec	1870	22	18	4	2	2	1	1	..	..	Carpentering, gardening.
Total in 4 institutions in Canada		....	292	220	72	17	22	19	3	6	..	
Total in 40 institutions		....	4632	2660	1972	395	299	186	107	78	35	

Taking the average annual cost of each pupil as $325, the sum of $1,500,000 was expended in the education of the deaf and dumb in America during the year 1872. The buildings are generally commodious and well planned; those of the New York, Ohio, and California institutions are particularly fine, as will be those of the Washington college. The annual reports of the various institutions often contain matter of permanent value; a quarterly periodical, the

"American Annals of the Deaf and Dumb," has appeared with some intermissions since 1847, and forms the most valuable collection of articles on this subject in the English language. Eight conventions of the principals and instructors have been held, beginning in 1850, at which papers of great interest have been read and discussed. Several periodicals have been published by deaf mutes themselves, but except when issued to afford work to pupils learning printing, they have generally had a very brief career. Religious services among deaf mutes who have left school have been conducted since 1850 by the Rev. Thomas Gallaudet, D. D., eldest son of the founder of the Hartford asylum. His headquarters are at St. Ann's church for deaf mutes (Episcopal), New York city, but services are conducted regularly or occasionally in many other places by himself or his assistants. Dr. Gallaudet has also recently established a home for aged and infirm deaf mutes, for the present located in New York, and under the care of the church mission to deaf mutes. Literary associations have been formed by the graduates residing in New York, Boston, and Philadelphia. "The Elect Surds," founded in 1866, is an organization for mutual improvement and assistance, having members and lodges throughout the United States; its standard of admission is high, and its discipline rigid, and the good it has already done is very considerable.—In England, there are five schools for the deaf and dumb in London, viz.: London asylum, Old Kent road, with a branch for girls at Margate; Jewish; Mr. Van Asch's, private; Miss Hull's, private, South Kensington; and female, Clapton. There are also schools at Edgbaston, near Birmingham, Manchester (with infant department), Liverpool, Exeter, Doncaster, Newcastle, Brighton, Bristol, Bath, Hull day school, and Handsworth-Woodhouse, near Sheffield (Roman Catholic). In Wales, there are schools at Swansea and Llandaff; in Scotland, at Edinburgh two (one being a department of Donaldson's hospital), Glasgow, Aberdeen, and Dundee. In Ireland, there are four in Dublin, viz.: the Claremont; St. Joseph's, male, and St. Mary's, female, Roman Catholic; and a day school; and one (also for blind) at Belfast. The British schools receive no government assistance, except that the guardians of poor law unions are empowered to pay for indigent deaf children at such rates as are specified. The London asylum has an income of £15,000, mostly from its fund; a few of the others have small investments, but the majority are almost entirely dependent on each year's subscriptions. The cost of each boarding pupil is about £20 a year. Owing to this scantiness of means, and the necessity of children leaving early to be apprenticed, the age for admission is from 8 to 12, and the course seldom extends beyond five years; no trades are taught, except printing at some. The Manchester institution has an infant department, for children under 12, and a few have been received as young as 3 years. The London asylum has 350 pupils, including those in the branch for girls at Margate; few of the rest have more than 100. At London articulation is attempted with all the pupils the first two years; the other British schools have discarded it entirely save for semi-mutes, except the Jewish school in London, and the Roman Catholic at Handsworth-Woodhouse, near Sheffield. Valuable text books and essays have appeared from the pens of Charles Baker of Doncaster, D. Buxton of Liverpool, A. Patterson of Manchester, W. R. Scott of Exeter, the Rev. J. Kinghan of Belfast, and the late D. Anderson of Glasgow. The buildings at Manchester and Glasgow are considered the finest in Great Britain. Several of the British schools have funds to assist in apprenticing their graduates. Religious services among the adults are sustained in London by the society in aid of the deaf and dumb, Oxford street, in Manchester by a similar society, and in other places by the principals of various institutions.—On the continent, as in the United States, while much has been done by private charity for the education of the deaf, it is provided for by the state as much as that of other classes of children. The course is more extended than in Great Britain, and workshops are attached to most of the schools. The number of establishments is so great that we can mention only a few of the most important. In France, those at Paris and Bordeaux are the oldest, and are supported by the state, and pursue precisely the same method; the latter has the most magnificent buildings of any in the world. At Paris, the male and female departments were separated in 1859, the girls being removed to a distant building under distinct management. The boys have a term of seven years, during the last three of which, while continuing their studies, they learn joinery, turning, wood carving, shoemaking, bookbinding, lithography, and gardening. The charge is 1,000 francs. Indigent pupils are supported by the state or their own department or commune. The most eminent French instructors since Sicard have been Bébian, author of a manual which has been the model for many others in Europe; Morel, editor of the "Circulars of the Paris Institution," and of the *Annales;* Paulmier, Puybonnieux, and Valade-Gabel, able and voluminous writers; Berthier, a deaf mute, biographer of De l'Épée; Pélissier, a semi-mute poet; Piroux of Nancy, an enthusiast for dactylology; and Recoing, who devised a syllabic dactylology for the instruction of his own son. In Belgium and Holland, the institutions are supported partly by the state and partly by religious communities and societies of subscribers. At Bruges the late Abbé Carton, and at Groningen the erudite brothers Guyot, formed the most complete collections ever made of works relative to the deaf; the latter issued in 1842 a *Liste littéraire philocophe*, or bibliography of whatever had been published concerning the deaf and dumb and

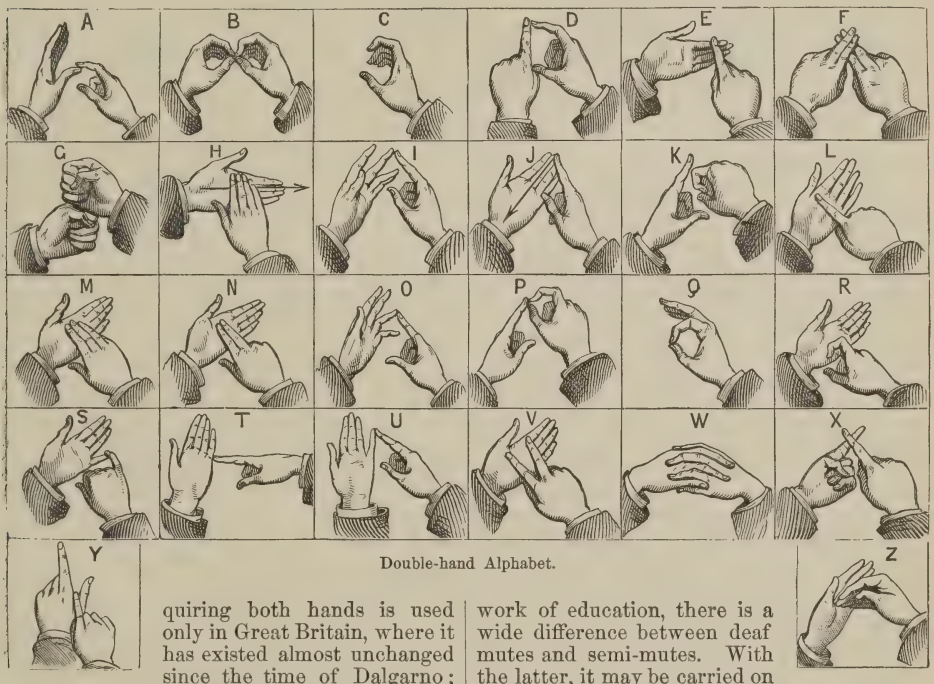
the blind. At Brussels are two schools: one for girls, pursuing the manual method; the other for boys, using the labial method. At Rotterdam is an articulating school, directed by D. Hirsch, the leading living advocate of this system. In Denmark a royal decree declares that "every deaf and dumb child born in this kingdom shall receive the education necessary to render him a useful member of society." There are two schools at Copenhagen, the royal institution and Keller's private articulating school. All pupils are first sent to the royal institution for a month, then examined by the heads of the two schools, and all who seem likely to attain success in articulation are removed to Keller's school, the state paying for them at the same rate as at the other. In Sweden, the Stockholm institution has the second finest edifice in Europe. In Russia, the St. Petersburg institution has two residences, one in the city, the other on an island in the river near by, occupied during the intense heat of summer. The German schools are numerous and well supported, but mostly small, and each teacher follows his own method, so that there is little unanimity. Nearly all admit that there is a large class who cannot profit by articulation, and permit the free use of natural gestures, though they reject both conventional signs and dactylology. Germany has been prolific of writers on the deaf; Reich of Leipsic, Grashoff and Sägert of Berlin, Neumann of Königsberg, Graser of Baireuth, Daniel of Zuffenhausen, and Kruse of Schleswig may be particularly mentioned. The *Organ der Taubstummen- und Blindenanstalten* is a valuable periodical now published monthly at Friedberg in Hesse. In Austria, the system of De l'Épée was first used, but a combined method is now generally employed. The imperial institution at Vienna, successively under Störk, May, and M. and A. Venus (father and son), and that at Prague in Bohemia, have always stood high. At Vienna are two of the best articulating schools in Europe, one supported by the Jewish community, the other the private establishment of Herr Lehfeld. The Swiss and Italian schools mostly retain the French system. The works of Assarotti of Genoa, Pendola of Siena, and Scagliotti of Turin, are of high repute. At Milan are four schools, two of which, one for boys and the other for girls, are under the direction of Signor Tarra. The third is a small private school for the wealthy. The fourth, the royal institution, was in 1863 converted into a normal school; its beneficial effects are already evident, but much remains to be done before education will be within the reach of all the deaf of Italy. In Spain, its birthplace, the art has languished. De Alea and Ballesteros of Madrid have labored almost alone. Portugal has but one school, at Lisbon. Schools were started at Melbourne and Rio Janeiro about 1865. The want of recent and full statistics from most parts of Europe renders the following table of existing institutions only approximately correct:

United States	36	Prussia	30
Canada	5	Other German states and Austria	50
England and Wales	18	Italy	15
Scotland	5	Spain	2
Ireland	6	Portugal	1
France	50	Australia	1
Belgium and Holland	10	Brazil	1
Denmark, Sweden, and Norway	5		
Russia	3		238

These institutions probably have 1,000 teachers and 10,000 pupils, and cost over $3,000,000 per annum.—*Psychical Condition and Methods of Education.* The psychical condition of the uneducated deaf mute, born deaf or rendered so at an early age, is difficult for others to realize. It has often been compared to that of the blind, but there is no real resemblance. Blindness is almost purely a physical misfortune: it leaves open the most important avenues to the mind. Deafness, less severe as a physical affliction, is far more so in its repressive effects upon the intellectual and moral nature. Verbal language is with us the great means of informing and developing the mind. But "the deaf knows nothing, because he hears nothing." He has no language whereby to receive or convey ideas, except rude gestures. The great objects of education are, first, moral and mental development; and second, the acquisition of a ready and ample means of communication which may in some degree restore the sufferer to society. With regard to the means and manner of attaining these ends, there have been from the first two opposite theories, one maintaining the pre-eminent value of articulation, the other of signs; while not a few instructors have taken a middle course and combined both methods. In writing the history of the art, the terms German, French, and early English are applied to these systems. But geographical boundaries have long ceased to divide them; all three are now to be found side by side in almost every country. We will therefore use the terms labial, manual, and combined.—The advocates of the labial method maintain that articulation is the only true bond between thought and words. Writing and dactylology are merely representatives of speech; and only on the presupposition of speech can they be proper vehicles of thought. Signs, though useful as a preliminary means of understanding between teacher and pupil, are not necessary links between ideas and words. They should be restricted to perfectly instinctive gestures, and even these can be discarded at a very early stage, and new words explained solely by means of words already familiar. The system of conventional signs first devised by De l'Épée is as arbitrary as any set of spoken or written symbols, and no more natural, no more readily apprehended even by the deaf. Its continued use is highly objectionable, leading the mind away from words, and habituating it to think in a different order.

Granting that the process of intellectual advancement may be slower, speech is so great a boon as amply to compensate for the sacrifice, being the readiest and quickest mode of communication, and the only one that can completely restore a deaf mute to society. For the manual method it is claimed that the absence of hearing not merely prevents any relation between thought and speech, but even renders speech unnatural. Words are not the universal and absolute medium of thought. Nature can use, and in the deaf demands, visible forms for its embodiment. They instinctively express themselves in gestures, and apprehend new signs more readily than new words. Signs are addressed directly to the perceptive powers, and are thus the readiest and best means of promoting intellectual progress, even in the study of verbal language. The language of signs is also capable of conveying the highest and most abstract ideas. All its deficiencies are fully made up by writing and dactylology, which are superior to lip-reading in precision of conveying words. To articulation there are grave practical objections. It can be acquired so as to be rendered serviceable only by the semi-deaf, the semi-mute, and a very small proportion of deaf mutes. Even these cannot control their voices, which are generally monotonous and often disagreeable, and unintelligible except to persons very familiar with them. To impart it requires much more time and labor, and an increased staff of teachers. Lip-reading is practicable only under very favorable conditions; the speaker must be very near, in a good light, and must enunciate slowly and distinctly; and even then it is little more than guesswork. It is becoming more and more the general opinion that, on the one hand, articulation is not merely practicable but desirable with a certain proportion, and that, on the other hand, with the rest signs may be used to greater advantage. Hence a combined method is now most in favor. But instructors differ greatly in their estimate of this proportion, and hence in the prominence they accord to one or the other method. Hirsch claims that 99 in 100 can acquire articulation to a serviceable extent. Hill estimates that 85 in 100 can converse with persons familiar with them, of whom 62 can do so easily, and 11 can converse readily with strangers on ordinary topics. Tarra considers only 30 per cent. likely to profit by instruction in articulation; and H. P. Peet, only 15 per cent. The English and French languages have been found more difficult than German, Danish, and Swedish, and the Slavic languages. In teaching articulation, it is of prime importance that the pupil perceive the difference between his own silent and vocalized breath; this perception Amman styled "the hearing of the deaf," and to produce it, the first great mystery of his art. The elementary sounds are then taught, six weeks at least being usually devoted to drill upon them, singly and in simple combinations of two or three, without regard to their meaning or want of it. When a perfect command of the vocal organs has been obtained, longer combinations are taught, and finally sentences gradually increasing in length. The order in which sounds are introduced, and the time when meanings are associated with them, vary according to the peculiarities of the pupil and the theories of the teacher. It is important to have daily exercises, however short, and to keep the pupil fresh and interested. With the semi-deaf and semi-mute, the task is rather to correct the erroneous and indistinct enunciation they are liable to fall into. The pupil has to rely much upon observation of the teacher's vocal movements; a little instrument, somewhat like a paper-folder, has been used by some to assist in bringing the tongue into the proper position; and diagrams and charts of the various positions of the vocal organs have been published by Baker of Doncaster and Vaïsse of Paris, among others. A new and valuable auxiliary has been found in the system of "visible speech" or universal alphabetics, invented by A. M. Bell of London, now in Boston. This consists of a series of symbols representing in outline the position of the organs in uttering every possible sound. Any language whatever can thus be phonetically written in characters which indicate both the pronunciation and how to produce it. Though not originally devised for the benefit of the deaf, it was soon introduced into Miss Hull's private school in London, and is now in use in the institutions at Boston, Northampton, Hartford, Washington, and Jacksonville. Mr. Bell has also devised a system of notation to indicate pitch and tone, which, in the few cases where it has yet been tried, has proved capable of guiding to a correct and pleasing modulation.—The language of signs is based upon the gestures devised by uneducated deaf mutes, which have been found strikingly similar to those employed by various savage tribes. They are: pointing to objects, expressions of real or simulated emotions, imitations of actions, and representation with the hands of the shape or use of articles. For convenience, the pantomime required fully to express a conception is often reduced to a single sign, by seizing upon some striking characteristic, such as the horns of a cow, or the feeling of the pulse by a physician. Such abridgments are often contrived by the deaf themselves. Ordinary objects, qualities, actions, and relations are readily represented; abstract ideas offer more difficulty. The simpler class are expressed by reference to some object having the quality intended; thus, touching the lips stands for redness. For a higher class recourse is had to rhetorical figures; thus, justice is represented by imitating with the hands a pair of scales evenly balanced. Many words are indicated by their initial letter in the manual alphabet, combined with some gesture;

synonymes, which would otherwise have the same sign, are thus discriminated. Idiomatic phrases, such as "laughing in the sleeve," are transferred into one or two expressive gestures. The natural gesture language has neither inflections nor distinctions for different parts of speech from the same root, and the pronouns and particles are usually omitted. The order is that which the person employing it judges most effective; the customary colloquial order is thought to resemble that of Latin. To establish a language of signs having an exact correspondence with our verbal languages was the aim of De l'Épée and Sicard. They invented signs for the inflections and particles, and prescribed the use of signs for every word, and in the exact order of the words. This system of methodical signs is of service in teaching languages, but is too stiff and cumbrous for general use in conversation by those imperfectly acquainted with words; and those who can use words fluently prefer the manual alphabet. A "Dictionary of Signs" has been repeatedly essayed; but the slightest attempt to frame a verbal description of a gesture, from which the gesture can be exactly reproduced by a reader of the description, will show the extreme difficulty of the task. Mimographies, or systems of arbitrary symbols for movements and positions, resembling those of phonography for sounds, have been proposed but not elaborated; the plan of the late G. Hutton of Halifax, N. S., appears most feasible. Signs at present can be accurately learned only from the living teacher and by constant practice. Two manual alphabets are in use. That requiring both hands is used only in Great Britain, where it has existed almost unchanged since the time of Dalgarno; it imitates the forms of the Roman capital letters, except the vowels; the distinction of these from the consonants, and the somewhat greater ease of learning the system, are certainly advantages, but not sufficient to counterbalance its inconveniences. The other requires only one hand, and imitates the forms of the small letters; it dates back to Bonet, and is used everywhere except in Great Britain, and even there it is gaining ground. The illustration shows the American usage; the letters *q* and *t* are slightly different in Europe. The *j* and *z* are completed by motions describing the curve of the one and the angles of the other. There are positions of the fingers for the numerals, used only in America.—In the work of education, there is a wide difference between deaf mutes and semi-mutes. With the latter, it may be carried on like that of hearing children, with only a change from the ear to the eye as the avenue of communication with the mind. With the former, the mind must be awakened to activity, as well as furnished with methods of communication; the unconscious acquisitions of hearing children are almost totally lacking; and the teacher's great difficulty is to realize how very low is the point of departure. Heinicke laid down the maxim, "First ideas, then words," and Jacotot added that difficulties must be graduated and presented singly. Accepting these principles, teachers differ greatly in their application. Some teach the alphabet first, others words as units, others complete sentences as single conceptions. Some



Double-hand Alphabet.



Single-hand Alphabet.

begin with a copious vocabulary; others frame sentences as soon as a few words have been learned; others begin with sentences and deduce the component words. Names of visible objects, their obvious properties, numerals, personal pronouns, and verbs of action are most readily apprehended. The adjectives first taught are usually those of size and color; the prepositions, those of locality. The simple tenses are exemplified by calling attention to a succession of actions. Much use is made of contrast. A considerable step has been taken when the pupil can unite two sentences or clauses, and another when he comprehends the variation of mood and voice. A child of ordinary intelligence, beginning at the age of 10 or 12, will learn in one year to write simple sentences concerning every-day affairs. During the first two or three years, works prepared expressly for the deaf and dumb are used principally; after that, text books prepared for hearing children are taken. Want of means is the only reason why so few advanced works for the deaf and dumb are published. Elementary manuals have been published in America by H. B. Peet, Jacobs, Keep, and J. S. Hutton, and in England by Baker, Hopper, Scott, Patterson, and others. Peet's and Jacobs's are the most extensive and popular. In most of the United States the legal term of attendance is seven years, but the actual average is five. In this time, however, the pupil usually acquires a command of written language and acquaintance with the common school branches sufficient for the ordinary demands of life. The higher classes pursue the studies usually taught in high schools; Latin, French, geometry, and surveying are taught to those who exhibit special aptitude. The college at Washington is designed to afford a course equivalent to that pursued in other colleges; and one object of it is to qualify deaf mutes better to be themselves teachers of the deaf and dumb. The chief modification of the course is in giving more time to English and less to classics and mathematics. It has been objected to special institutions for both the deaf and the blind, that their peculiarities are intensified by aggregation. Arrowsmith in England, in 1817, Graser in Germany, about 1830, and more recently Blanchet of Paris, proposed to educate the deaf and dumb in common schools, along with their hearing brothers and sisters. The experiment has been tried in Ireland, Prussia, France, and Belgium; everywhere it has been found that its inconveniences and disadvantages far counterbalance any attending the other system. This, however, was in the elementary instruction. In a few recent cases deaf persons have with benefit and credit attended the higher schools for the hearing.—The legal status of the deaf and dumb who were unable to read and write was, under the Roman law and the codes founded upon it, practically that of the insane and the idiotic. The English common law early recognized that intelligence sufficient for the enjoyment of all civil rights, and for credibility and accountability in courts of law, might be manifested otherwise than by the use of verbal language. The principle is now settled by numerous precedents, both in England and in the United States, that the degree of intelligence in a deaf mute is to be decided as a matter of fact, and any means whereby he can express himself intelligibly, directly or through an interpreter, is admissible. A will made by a deaf and dumb lady, at an advanced age, and after she had become blind, was lately declared valid in England. It is only in the case of the totally uneducated that there is any question

of accountability. The most exhaustive essays on this subject are by C. Guyot of Groningen, and H. P. Peet and his son I. L. Peet of New York. Berthier of Paris is editing the *Code Napoléon* with reference to the wants of the deaf and dumb.—The number of the deaf and dumb who have attained eminence is very small, and all or nearly all have been semi-mutes. Q. Pedius and Navarrete, Massieu and Clerc, Pélissier, Berthier, and Kruse have already been mentioned. In Great Britain we note Walter Geikie, S. R. A. (1795–1837), called "the Teniers of Scotland;" John Kitto, D. D. (1804–'54), editor of the "Biblical Cyclopædia" and author of "Daily Bible Illustrations;" and Mr. Lowe, a conveyancer and chamber counsel in London. In France, Baron Eugène de Montbret (1785–1847) was distinguished as a linguist. In America, James Nack has published several volumes of poems; John R. Burnet has written many contributions to periodicals of a high class; the late Albert Newsam was a leading lithographic artist; John Carlin is known both as a miniature painter and as a writer; and Francis McDonnell has attained some reputation as a sculptor. Mrs. Mary Toles Peet has written numerous fugitive poems, and Miss Laura C. Redden has made her *nom de plume* of "Howard Glyndon" familiar to magazine readers.

DEÁK, Ferencz, a Hungarian statesman, born at Söjtör, county of Zala, Oct. 17, 1803, died Jan. 28, 1876. He was educated at Comorn and Raab, studied law, was elected to the diet of 1832–'6, and became the leader of the opposition. He was reëlected to the diets of 1839–'40, and of 1843–'4, but refused to serve in the latter on account of instructions given to the representatives to vote against the proposed equality of taxation, to which Deák with some 200 other nobles voluntarily subjected himself. Failing health compelled him to decline the offered election to the diet of 1847–'8; but in the spring of 1848, after the decisive victory gained by the opposition, under the lead of Kossuth, over the Austrian government, he accepted the portfolio of justice in the Batthyányi ministry. While holding this office he attempted a complete judicial reform, but the scheme was interrupted by the war. The ministry resigning on the outbreak of open hostilities against Austria, he retired to private life. In December he was a member of the unsuccessful deputation sent to the camp of Windischgrätz for the negotiation of peace, was arrested by that commander, but soon released, and took up his abode at Pesth. After rejecting various overtures made him by the Vienna cabinet with the object of gaining him over as a mediator between the dynasty and the Hungarian people, he reappeared in the public arena toward the close of 1860, after the reverses in Italy and financial embarrassments had compelled Francis Joseph to promise the restoration of the national liberties. Elected by the city of Pesth to the diet of 1861, he was acknowledged as the leader in that assembly. But his efforts to bring about a satisfactory solution of the national difficulties on the basis of the laws of 1848 failed, and in August, 1861, the diet was dissolved. A new diet was convoked late in 1865, but was prorogued shortly before the outbreak of the Austrian war with Prussia in 1866. After its disastrous termination the national demands of Hungary, as formulated by Deák, then again representative from Pesth, were readily assented to by Beust, the new chief minister of Francis Joseph, and thus the dualistic basis was created on which the Austro-Hungarian empire now rests. (See Austria, and Hungary.) Deák, who had throughout evinced equal firmness and moderation, now became the leader of the majority in the diet, which was favorable to the Hungarian cabinet formed by Andrássy, though occasionally opposing it upon minor points. He afterward continued nearly in the same attitude toward the cabinets of Lónyay (formed in 1871) and Szlávy (in 1872), having been successively reëlected by the city of Pesth.

DEAL, a parliamentary and municipal borough and market town of Kent, England, on the North sea, between the N. and S. Forelands, 8 m. N. E. of Dover, and 66 m. E. S. E. of London; pop. in 1871, 8,004. It is divided into Upper and Lower Deal; the former, which comprises the residences of the wealthy classes, was a small fishing village in the time of Henry VIII.; the latter, built on three streets, close to the beach and parallel with the coast, is entirely of modern date, and has most of the business and the bulk of the population. The town contains a spacious esplanade, a public library and reading room, a custom house, a naval yard and storehouse, barracks, a town hall, a jail, baths, gas works, and a nautical school. At its S. end is a fortress built by Henry VIII. in 1539, and on the north is Sandown castle, now used as a coast guard station. There is no harbor, but vessels of all dimensions ride safely in a spacious roadstead called the Downs, between the shore and the Goodwin sands. The latter lie directly opposite the town, and are the scene of frequent shipwrecks. There is little or no foreign commerce, but a brisk trade in naval supplies is carried on with vessels which, at times to the number of 400 or 500, anchor in the Downs while waiting for favorable winds. The principal industries are boat building and sail making; but many of the inhabitants are fishermen, and the skill and daring of the Deal boatmen are almost proverbial. Deal was annexed to the cinque ports in the 13th century, as a member of Sandwich. Adjoining Deal on the south is the suburban village of Walmer, a resort for sea bathing, where is situated Walmer castle, the official residence of the warden of the cinque ports.

DEAN (Lat. *decanus*, chief of ten; old Fr. *deien;* mod. Fr. *doyen*), a title given to certain persons who, in ecclesiastical or lay bodies, are first either in dignity or in seniority. The

various etymologies of this word, as given in Du Cange's *Glossarium*, show that the *decani* were at the introduction of Christianity minor officers of the civil, military, and ecclesiastical administrations of the Roman empire. In the army a *decanus* had charge of ten men, while the centurion commanded ten *decaniæ*. In the judicial organization under the emperors, there were *decani* or petty judges in each hamlet or country district, which also bore the name of *decania: decani . . . . minores judices qui per decanias jus dicebant.* In the imperial court of Constantinople, the *decani* (*δεκαδάρχοι*, *δεκάρχοι*, *δεκάνοι*) were inferior officers or ushers. The name passed into the church with similar functions. In the East, especially in the churches of Constantinople, the *δέκανος* was a lay officer or beadle, having care of the church decoration and ceremonial; he assigned each clergyman his place in the public functions, and distributed to each his stipend. In ancient monasteries the monks were distributed into *decaniæ*, over each of which a *decanus* or dean presided, who superintended the manual labors and devotional exercises of his ten, and rendered an account thereof to the abbot. In some at least of the ancient female monasteries, officers with a corresponding denomination existed. It was retained in western Europe by the church, the great schools, the guilds of trades, the learned professions, scientific and literary academies, and by municipal bodies. In the church, the word dean was more especially applied either to the heads of chapters in collegiate churches, or to archpriests in the country who had the superintendence of the parishes and clergy of the deaneries or districts into which each diocese was divided, and who thence were called "rural deans," in contradistinction from "deans of cathedral churches" or "deans of peculiars," *i. e.*, of collegiates that were not cathedrals, both of which classes were generally confined to cities. In France and other continental countries the same ecclesiastical division and office existed under different names. In some French dioceses the rural dean is called *archiprêtre*, and his deanery *archiprêtré;* in others he is called *curé-doyen*, or simply *doyen*. In cities and large towns there are also *archiprêtres* and *curés-doyens*. In Italy rural deans were unknown before the 15th century, probably on account of the great multiplicity of episcopal sees and the consequent narrow limits of each diocese. In Ireland rural deans are to be found everywhere among the Roman Catholic clergy.—The denomination "dean" in the English church is exclusively applied to deans of collegiate churches, whether these churches actually have chapters, or had them before the reformation. In universities a dean is sometimes head of a house or college, and sometimes only charged with the maintenance of religious discipline. The various faculties in universities, such as theology, medicine, and law, have their deans, who are generally so by seniority or priority of admission. Such is the case also in the college of cardinals, whose dean is the oldest cardinal bishop by promotion. Thus too the French have their *doyen de l'académie française*, *doyen des avocats*, and *doyen des maréchaux de France*. In every country the resident diplomatic body has its dean. In all Christian countries during the middle ages the various trades' corporations or guilds had their deans. In the old French parlements, the oldest *maître des requêtes* was called *doyen des doyens*.—Toward the end of the 8th century we find the first authentic mention made of female chapters or canonesses, who were either regular canonesses, following the rule of St. Augustine, or secular, and bound by no permanent religious vows. Such bodies became quite numerous in course of time both in France and Germany, and were composed almost exclusively of ladies of royal, princely, or noble birth. The most famous in France was the house of Remiremont. In France the appellation of *doyenne* was in many instances given to the heads of such chapters; and the phrase *élire la doyenne* is frequently met with in old historians.

DEANE, James, an American physician, born in Coleraine, Mass., Feb. 14, 1801, died in Greenfield, June 8, 1858. He removed to Greenfield in 1822, where, after writing in a public office four years, he studied medicine, and practised as a physician and surgeon from 1831 until his death. In the spring of 1835 he discovered the fossil footprints in the red sandstone of the Connecticut valley. He called the attention of scientific men to the subject, and his investigations were afterward extended by Prof. Edward Hitchcock and others. American geologists were early convinced of the genuineness of the footprints; but great skepticism existed in England until, in 1842, Dr. Deane sent a box of the impressions with a communication to Dr. G. A. Mantell, by whom they were placed before the geological society of London. He was a contributor to the Boston "Medical and Surgical Journal" and the "American Journal of Science and Art," wrote papers for medical and scientific societies, and at the time of his death was engaged in the preparation of an elaborate memoir upon fossil footprints for the Smithsonian institution, with lithographic plates made by himself, by which the color of the rock and the actual appearance of the footprints were exactly reproduced. These plates were all completed.

DEANE, Silas, an American diplomatist, born at Groton, Conn., Dec. 24, 1737, died at Deal, England, Aug. 23, 1789. He graduated at Yale college in 1758, and was a member of the first continental congress in 1774. He was sent by congress to France as a political and financial agent, and arrived at Paris in June, 1776, with instructions to ascertain the temper of the French government concerning the rupture with Great Britain, and to obtain military supplies. When in September it was determined

to send ministers to negotiate treaties, Franklin and Arthur Lee were commissioned to join him at Paris, and he assisted in the negotiation of the treaty with France. In consequence of the extravagant contracts he had entered into, not authorized by his instructions, he was recalled, Nov. 21, 1777, and John Adams appointed in his place. He left Paris April 1, 1778, and on his return, being required to give an account of his proceedings on the floor of congress, evaded a complete disclosure, on the ground that his papers were in Europe. He then attacked congress and his fellow commissioners in a public manifesto, but did not succeed in removing suspicion from himself of having misapplied the public money. He afterward published in 1784 an address to the citizens of the United States on the same subject, and returning to Europe died in great poverty.

DEAN FOREST, a royal forest of Gloucester, England, W. of the Severn, and 10 m. S. W. of Gloucester; area, about 22,000 acres, one half of which is now set aside for navy timber; pop. about 11,000. Anciently nearly all that part of the county lying W. of the Severn was included within its limits. It embraces a number of plantations of oak, beech, and other trees, and orchards famous for the production of styre-apple cider. It abounds in coal and iron, and several railways have been constructed from the mines to the Severn, Wye, &c. Dean Forest is divided into six districts called walks, and is the property of the crown. The inhabitants, who are mostly employed in mining, pay no county rates.

DEARBORN, a S. E. county of Indiana, bordering on Ohio, drained by Whitewater river, and separated from Kentucky by the Ohio river; area, 291 sq. m.; pop. in 1870, 24,116. Part of the surface is level and part hilly; the soil is generally fertile. Limestone is the principal rock. The Ohio and Mississippi, and the Indianapolis, Cincinnati, and La Fayette railroads, and the Whitewater canal traverse it, and the Whitewater Valley railroad intersects the N. E. corner. The chief productions in 1870 were 171,656 bushels of wheat, 448,793 of Indian corn, 156,314 of oats, 59,122 of barley, 66,506 of potatoes, 18,697 tons of hay, 331,232 lbs. of butter, and 18,777 of wool. There were 4,507 horses, 4,621 milch cows, 4,239 other cattle, 6,017 sheep, and 10,820 swine; 6 flour mills, 1 planing mill, 3 saw mills, 4 manufactories of carriages and wagons, 1 of cars, 8 of barrels, 5 of furniture, 1 of iron castings, 3 of machinery, 8 of cigars, 1 of woollen goods, 3 distilleries, and 8 breweries. Capital, Lawrenceburg.

DEARBORN, Henry, an American general, born at Hampton, N. H., in March, 1751, died at Roxbury, Mass., June 6, 1829. He was a practising physician at Portsmouth when, on hearing of the battle of Lexington, he immediately marched, April 20, 1775, with 60 volunteers, and was at Cambridge early the next day, a distance of 65 m. On his return he was made a captain in Stark's regiment; was at the battle of Bunker Hill, June 17, and accompanied Arnold on the expedition through the woods of Maine to Quebec. In the attack on that place, Dec. 31, he was taken prisoner, afterward released on parole, and exchanged in March, 1777. He served as major under Gates at the capture of Burgoyne, and distinguished himself and his regiment by a gallant charge at the battle of Monmouth in 1778. In 1779 he served in Sullivan's expedition against the Indians, in 1780 with the army of New Jersey, in 1781 at Yorktown, and in 1782 was on garrison duty at Saratoga. Having emigrated to Maine, he was appointed by Washington in 1789 marshal of that district. He was twice member of congress, and for eight years, during Jefferson's presidency, secretary of war. In 1809 he was made collector of Boston, and on Jan. 27, 1812, he was commissioned as senior major general in the United States army, and commander of the northern department. In the spring of 1813 he captured York in Upper Canada, and Fort George at the mouth of the Niagara, but was recalled, and soon afterward placed in command of the military district of New York city. Resigning his commission in 1815, he was appointed, May 7, 1822, minister to Portugal, where he remained two years, and was recalled at his own request.—His life and papers were published by his son, Gen. Henry Alexander Scammell Dearborn (1783–1851), also the author of "Commerce and Navigation of the Black Sea" (2 vols. 8vo, 1819), "Internal Improvement and Commerce of the West" (1839), &c. He was a lawyer at Salem, Mass., brigadier general of militia, commanding Boston harbor in 1812, collector of Boston 1812–'29, congressman 1831–'5, adjutant general 1835–'43, and mayor of Roxbury 1847–'51.

DEATH VALLEY. See supplement.

DEATH WATCH, a superstitious name given to the sound produced by several insects, but mostly by a small beetle, hence also so called, of the family *serricornes*, and genus *anobium* (Fabr.). The body is firm, about a quarter of an inch long, and ovoid; the rounded head is almost entirely received into an arched thorax;



1. Anobium striatum. 2. A. tessellatum. 3. A. pertinax.

the antennæ are terminated by three joints larger than the rest, the last being ovate; the mandibles are short, thick, and dentated beneath the point; the palpi are very short, and end in

a large ovoid joint; the tibiæ are not dentated, and the terminal spurs are very small. They are slow in their motions, rarely fly, and when touched counterfeit death for a long time; hence their generic name, from the Greek *ἀναβίον*, resuscitated. It is said that they will allow themselves to be pulled to pieces, and even slowly burned to death, without showing the least sign of life. The larvæ resemble white soft worms, with six short feet; the scaly head is armed with two powerful cutting maxillæ, with which they gnaw into wood, old furniture, books, &c., leaving small round holes like those of a gimlet, whence the French name *vrillettes;* they produce the small masses of worm-eaten wood often seen on the floors of old and deserted houses; the larvæ also attack the flour of various grains, wafers, and prepared birds and insects, concealing themselves in grooves or galleries; they pass the nymph state in their cells lined with a few silken threads. The tick of the death watch is made by the perfect insects, of several species, by striking their heads or mandibles against the wood in which they are concealed; these strong and repeated strokes, from 7 to 11, resemble the regular ticking of a watch, and are supposed to be the means by which the sexes call each other. Ten species are enumerated by Mr. Stephens in Great Britain alone, which make this sound. One of the most common is the *A. striatum*, with striated wing covers, considered by some the same as the *A. pertinax* (Fabr.), of a dark brown color; another is the *A. tessellatum* (Fabr.), with the wing covers handsomely tessellated. The tick resembles that made by tapping the finger nail gently on the table, so much so that the insect hearing this may often be led to recommence its sounds. The superstitious regard this tick with fear, firmly believing that

> The solemn death watch clicks the hour of death.

Such firm hold had this belief in Sir Thomas Browne's time, that, says he, "the man who could eradicate this error from the minds of the people would save from many a cold sweat the meticulous heads of nurses and grandmothers." The wood louse, a neuropterous insect, of the tribe *termitinæ*, and genus *psocus* (Latr.), makes a similar tick. The *P. pulsatorius* (Linn.) is very small, soft, white, and slender, with a reddish mouth; it lives in old wood and books, wall paper, collections of insects and plants, &c.; it is quick in its motions, darting into dark corners.

DE BAY. See Baius.

DEBENTURE (Lat. *debere*, to owe), the drawback or right allowed to merchants of claiming repayment or remission of duties on imported goods when the goods are reëxported. The term is also used for the custom house certificate issued as a voucher for such right. Goods may be entered subject to debenture, in which case the original invoice is left with the collector; but without such entry at the time of importation, the drawback may be obtained upon reëxportation by making satisfactory proof of the identity of the goods. It is required that they be exported in the original packages, casks, &c., and when any change of such packages becomes necessary, it must be made under the inspection of a revenue officer. A drawback of duties on wines and spirits is not allowed unless such liquors have been deposited in public stores, and kept there from the time of landing until reshipment. Three years from the time of importation is allowed for reëxportation with drawback of duties, but such exportation must be from the district of original importation. The general regulations of debenture are contained in the act of congress of March 2, 1799, but modifications have been made by various other acts. The term is also applied in England to railway mortgages, and sometimes to the obligations issued by municipal bodies.

DEBRECZIN (Hung. *Debreczen*), a royal free town of Hungary, county of Bihar, in the N. E. part of the Hungarian Lowland (Alföld), 119 m. E. of Pesth; pop. in 1870, 46,111. It is an open town with long suburbs, ending on a vast heath. The houses are mostly of one story and thatched. There are some fine buildings, of which the principal are the town house, the Catholic church, the Piarist monastery, and the Protestant reformed college, founded in 1792. The last mentioned has a large library and valuable collections, and is the best frequented seat of learning for the Calvinistic youth of Hungary. There are several other higher educational institutions belonging to both Protestants and Catholics, as well as a number of charitable establishments and a house of correction. The principal streets are paved with brick. The inhabitants, who with the exception of a few thousands are Protestants and Magyars, are mostly employed in agriculture. Many of them retire several times in the year with their families and cattle to their distant fields on the plains, where they live for weeks in huts or under tents. The principal manufactures are coarse woollens, sheepskins for clothing, leather, shoes and boots, saltpetre, soap, various kinds of pottery, cutlery, cooperage, combs, buttons, pearl wreaths, and particularly clay tobacco pipes. The trade of Debreczin is important, consisting chiefly in cattle, horses, swine, hides, bacon, potash, wine, various kinds of oils, cheese, and Vienna haberdashery and colonial articles, for which it is the chief depot for eastern Hungary and Transylvania. It has four annual fairs held on the surrounding plains, which are attended by many thousands of people. Railway lines connect the town with all parts of the empire. The bread of Debreczin is renowned, but the town suffers from scarcity of water.—During the long wars between the Hapsburg monarchs of Hungary, the Turks, and the princes of Transylvania,

Debreczin was often taken, pillaged, and partly destroyed. The Turks finally left it in 1684. Having embraced Protestantism in the first half of the 16th century, and adopted the Helvetian creed in a synod held there in 1567, it suffered bloody persecutions in 1686 from the Austrian general Caraffa. It also suffered greatly during the insurrection under Rákóczy, after the termination of which it was made a free royal town in 1715. In the earlier part of 1849 it was the seat of the Hungarian revolutionary government under Kossuth, and the sessions of the diet were held there from Jan. 9 to May 30, in the most important of which, held in the Calvinist church, on April 14, the independence of Hungary was declared. On Aug. 2 the flank guard of Görgey, under Gen. Nagy-Sándor, was surprised by an overwhelming Russian force on the plain before the town, and was dispersed after a short resistance.

DEBTOR AND CREDITOR. In the early laws of every country there will be found greater severity against debtors than at a later period of civilization. The reason is twofold: 1, the want of sufficient intellectual acumen to distinguish the degrees of wrong in cases of fraud and of unforeseen accident and misfortune; 2, the actual want of probity in the earlier period of national existence. It is very common to suppose that in a rude state of society there is a greater degree of honesty and fair dealing than in an advanced civilization; but that this is a mistake we need no better proof than the history of the laws of the Germanic nations. There was no lack of personal independence, at least of intrepidity in war, yet in judicial proceedings it was found that no reliance whatever could be placed upon the oaths of parties or witnesses. Thus, instead of producing witnesses who could testify to the fact in question, numerous compurgators or conjurators were called to swear that they believed the statement made by the party who called them; and this was found so uncertain that the trial by combat was preferred as a better mode of determining the fact. So it is reasonable to infer by analogy that the cruelty exhibited in the early laws of the Athenians, and in the Roman law of the twelve tables, was founded upon the trickery and dishonesty which prevailed at Athens and Rome. The right of the creditor to sell the debtor as a slave was abolished by Solon. The decemvirs of Rome, who professed to follow his legislation, did not conform to it in this particular, but enacted a law more oppressive than the Athenian, or indeed than any of which we have an authentic record, whereby the debtor was subject to be taken by the creditor to his own house, and to be most cruelly dealt with for 60 days, after which he could be sold into foreign slavery. The atrocious conduct of a usurer who undertook to gratify his lust upon a young man who had surrendered himself for a debt of his father, and in consequence of the resistance of the prisoner scourged and otherwise maltreated him, led to an outbreak of the people and the passage of a law by the senate, A. U. C. 428, by which creditors were prohibited from taking debtors into their own custody, but the right of selling them into slavery still remained. This power seems to have become practically obsolete, and a milder mode of treatment grew up under the emperors. According to the Institutes of Justinian, a debtor was subject only to loss of property for payment of his debts. The same practice prevailed in England at an early period. Suits were commenced by a summons, and if the defendant failed to appear, process was issued for the attachment of his property; but in actions upon contract no further remedy was given, either at the commencement of the suit or after judgment. In actions for injuries accompanied with force, it was, however, permitted to issue process for the arrest of the person. By various statutes the same remedy was extended to other actions in which there was no force, as actions of account, debt, detinue, and actions on the case. In the court of king's bench, however, the defendant was, without the aid of these statutes, liable to arrest upon process issued for an alleged trespass, and when arrested he was made to answer for any other cause of action. In the court of exchequer jurisdiction was obtained by a similar fiction. Upon recovery of judgment in any action in which an arrest was allowed upon mesne process, a writ could be issued called a *capias ad satisfaciendum*, whereby the defendant could be arrested and committed to close custody (*in arcta custodia*); and if he was suffered by the sheriff to be outside of the jail, it was deemed an escape, for which the sheriff was made liable for the whole amount of the debt. In the United States the same forms of proceeding were introduced, but were gradually modified in advance of the changes in the English practice. In the state of New York it was provided that a *capias ad satisfaciendum* should not be issued till after an execution against the property (called a *fieri facias*) had been issued and returned unsatisfied. In 1831 imprisonment for debt upon contract, except in certain cases, was abolished in that state. The exceptions were where fraud had been committed or was intended, in which cases an arrest could be ordered by a judge, to which exception was added, by a statute of 1846, the case of money received in a fiduciary capacity; and by a subsequent statute imprisonment for interlocutory costs was abolished. The principle embraced in these laws was adopted in the code of procedure of 1849. Arrest is thereby prohibited in all civil actions, except in certain specified cases, viz.: in actions for injury to the person or character, or for injuring or wrongfully taking or detaining property; in cases of embezzlement by public officers, or persons acting in a private fiduciary capacity; for misconduct in office or any professional employment; in actions to recover

the possession of personal property, where it is concealed or kept out of the reach of the sheriff; and in cases where the defendant has been guilty of a fraud in contracting the debt or in avoiding payment. In the excepted cases there may be an arrest by an order of a judge, in which order the amount for which the defendant shall be held to bail is specified; and when there has been arrest upon mesne process, the like remedy in all cases is given upon final process. Females are exempted from arrest in all cases except actions for wilful injury to person, character, or property. The legislation of the state of New York has been followed in other states, and may be assumed in its general features as the prevalent system throughout the United States, in respect to the coercive remedy for the collection of debts by process against the person.—In England important modifications have been made in the laws relating to the collection of debts. In 1838, by statute 1 and 2 Victoria, c. 110, arrest upon mesne process for debts exceeding £20 was abolished, except in cases where proof was made of the intention of the defendant to leave England. Provision was also made for discharge from liability to imprisonment upon final process, upon the surrender by the debtor of all his property for the payment of his debts. In 1842 (5 and 6 Victoria, c. 116) similar provision was made for discharge from imprisonment for debts under £20; and in 1844 (7 and 8 Victoria, c. 96) arrest upon final process in an action for a debt not exceeding £20 was abolished, except where there was fraud in the contracting of the debt, or a fraudulent attempt to avoid payment, leaving it to the discretion of a judge to order an arrest upon proof of any such fraud. A great amelioration was effected by these statutes. The relief under the previously existing bankrupt laws applied only to a class designated as traders, leaving a large proportion of debtors entirely unprovided for; and the relief itself, even in cases to which it was applicable, was harsh to the debtor, wasteful of the assets devoted to the creditors, and not unfrequently all beneficial effect was defeated by the technical stringency of the statutes and the extreme severity of the courts. Then as to the relief of insolvents, under the act of 32 George II., c. 28 (commonly called the lords act, from the circumstance of its having originated in the house of lords), it was limited to debtors actually in custody upon execution for debts under £100 (afterward extended to £300); and notwithstanding the surrender of the debtor's property as provided by the act, the creditor could still detain the debtor in prison, subject only to the condition that he was to allow 2*s.* 4*d.* a week for his support. The relief afforded by the statutes referred to has been supplemented by others in the same direction, and by the recent changes in the bankrupt laws. (See BANKRUPT.)—The several states of the American Union have insolvent laws under the provisions of which, when no national bankrupt law is in force, an insolvent debtor may obtain relief from imprisonment for debt, and in some states may be wholly discharged from the obligation of his debts on making surrender of his property, with the exception of those things which by law are exempt from execution. Cases in which debts were fraudulently contracted, and in which payment is sought to be avoided by fraud, are exempted from these laws; or if provided for, the discharge is generally withheld until after imprisonment for a specified time proportioned to the amount of the debt, and after a judicial finding that the property has been fully surrendered. As to the force of state insolvent laws, important questions have arisen under the clause of the constitution of the United States forbidding the states to pass laws impairing the obligation of contracts. The conclusions to be drawn from the judicial decisions on the subject may be stated as follows: 1. The states may legislate on the subject of bankruptcy and insolvency, subject to the authority conferred upon congress by the constitution to adopt a uniform system of bankruptcy, which authority when exercised is paramount, and supersedes all state enactments which conflict with the system established. 2. Such state laws as terminate the legal obligation of the debt cannot constitutionally be made to apply to contracts entered into before they were passed, but they may be made applicable to all such future contracts as can be considered as having been made with reference to them. 3. Contracts made within a state where an insolvent law exists, between citizens of that state, are to be considered as made with reference to the law. But such law cannot apply to a contract made in one state between a citizen thereof and a citizen of another state, nor to contracts not made within the state, even though between citizens thereof. And where the contract is made between citizens of different states, the circumstance that it is to be performed in the state where the insolvent law exists will not render it subject to discharge under such law. 4. If, however, the creditor in any case voluntarily makes himself a party to the proceedings in insolvency, he will be bound thereby, whether his demand would otherwise have come under the operation of the insolvent law or not.—By the laws of most European countries, the cession of the property of an insolvent to his creditors for the payment of debts is not a ground for releasing his future acquisitions from liability for his debts, but only for discharging the debtor from process against his person. In France, the law respecting imprisonment for debt has recently undergone great modification; and in case of commercial debts, the imprisonment is permitted for a limited period only. Ecclesiastics, minors, women not engaged in commerce, and septuagenarians are wholly exempt.

DECALCOMANIE. See supplement.

DECALOGUE (Gr. *δέκα*, ten, and *λόγος*, word), the ten commandments, or more properly, the ten words or sayings which God delivered to the Jews through Moses, according to Exod. xx. 3–17, and Deut. v. 7–21. The two versions are almost identical, except in the reason assigned for the fourth commandment, which is totally different in the two. They were written, as it is said, "by the finger of God," upon two tables of stone, and given to Moses upon Mount Sinai. They contain the fundamental precepts of religion and morality, and are almost universally regarded as the golden rules for every society, age, and people. The division of the commandments has elicited a manifold difference of opinion. Of the various modes of dividing them which have found numerous and weighty defenders, the following may be regarded as historically the most important: the Origenian or Philonic, the common Jewish or Talmudic, and the two Masoretic. According to the Origenian division, which is supported by the Jewish testimony of Philo and Josephus, and the authority of Origen, Gregory Nazianzen, and Jerome, the first precept consists mainly in the words: "Thou shalt have no other gods but me;" the second forbids images of God; the third forbids taking the name of God in vain; the fourth commands the sanctification of the sabbath day; the fifth, to honor one's father and mother; the sixth forbids murder; the seventh, adultery; the eighth, theft; the ninth, bearing false witness; and the tenth, concupiscence. This division has been adopted by the Helvetian and Anglican churches, by the Lutherans of the school of Bucer, and by the Socinians. The Talmudic division, which is also that of the modern Jews, being supported among other authorities by Maimonides's "Book of the Commandments," and Aben Ezra's commentary on the Pentateuch, differs from the preceding only in making the words "I am the Lord thy God, who brought thee out of the land of Egypt, out of the house of bondage," the first commandment, and in considering the prohibition of the worship of other gods and of images as the second. This division is proved by a quotation from Julian in Cyril of Jerusalem to have been generally known in the early centuries of the Christian era, and through the authority of Pseudo-Athanasius has also been adopted by the Greek churches, including the Russian, which has sanctioned it in its catechism. The Masoretic division, in both forms, so called on account of its being based on the Hebrew text as revised according to the rule of the Masorah, unites the passage on the exclusive worship of God with the prohibition of images to make the first commandment, and restores the number ten, which is distinctly specified in the Scriptures, by dividing the last into two; the text of Exodus separating by the mark of division (ס) the prohibited coveting of a neighbor's house, as the ninth commandment, from the prohibited coveting of all other objects as the tenth, while the text of Deuteronomy separates and gives first the commandment against coveting another's wife. The division according to Exodus has been adopted by the Lutheran church, and also by the council of Trent; the other Masoretic form, which is supported by the Septuagint, is adopted by St. Augustine, Bede, and Peter Lombard. The question, how many of the commandments were engraved on each of the tables of Moses, has been agitated, mostly on philosophical grounds. Philo, and after him Irenæus, are for two pentads; others believe the commandments on worship alone to have been engraved on the first table, which is regarded by some as the more divine of the two.

DECAMPS, Alexandre Gabriel, a French painter, born in Paris, March 3, 1803, died at Fontainebleau, Aug. 22, 1860. In early life he visited Turkey, and afterward executed a great number of pictures of oriental scenery and characteristics. He gained a high reputation by these works, as well as by his pictures of animals, especially monkeys. One of them, "The Monkey Connoisseurs," is intended as a satire on the jury of the Paris academy of painting, on account of the severe criticisms passed upon his works. Among his best historical pictures are "Joseph sold by his Brethren" and the "Defeat of the Cimbri." His style of painting was bold and original, his coloring brilliant, and he was especially happy in presenting strong contrasts in a humorous and picturesque manner. He gave an interesting account of his boyhood and his early studies in a letter addressed to Véron, who published it in his *Mémoires d'un bourgeois de Paris.*

DE CANDOLLE. See CANDOLLE.

DECAPODS, the order of ten-footed crustaceans, having normally nine cephalic segments and five foot segments, each of the latter bearing a pair of so-called feet. They embrace the highest crustaceans, like the crabs, lobster, and squill. The lower forms extend back in time, as far as is positively known, to the beginning of the carboniferous period.

DECAPOLIS (Gr. *δέκα*, ten, and *πόλις*, city), a district of eastern Palestine, which contained the following ten cities: Damascus, Philadelphia, Raphana, Scythopolis, Gadara, Hippos, Dion, Pella, Galasa or Gerasa, and Canatha. The cities were probably rebuilt, partially colonized, and given political privileges after the conquest of Syria by the Romans, 64 B. C., and at some time were confederated. The word is not used to designate the country after the 1st century.

DECATUR. I. A S. W. county of Georgia, bordering on Florida, intersected by Flint river, and bounded W. by the Chattahoochee; area, 1,062 sq. m.; pop. in 1870, 15,183, of whom 7,718 were colored. The surface is irregular, and the soil productive. The Atlantic and Gulf railroad terminates at Bainbridge. The chief productions in 1870 were 215,040 bushels of Indian corn, 23,055 of oats, 52,115

of sweet potatoes, 5,444 bales of cotton, 48,614 lbs. of tobacco, 27,625 of rice, and 49,721 gallons of molasses. There were 742 horses, 3,412 milch cows, 8,800 other cattle, 5,831 sheep, and 10,586 swine. Capital, Bainbridge. **II.** A S. W. county of Tennessee; area, 325 sq. m.; pop. in 1870, 7,772, of whom 1,056 were colored. The Tennessee river flows along its entire E. boundary, and Beech river intersects it. The surface is nearly level, and almost all the land is fertile. The chief productions in 1870 were 19,239 bushels of wheat, 314,653 of Indian corn, 20,549 of oats, 15,913 of sweet potatoes, 96,348 lbs. of butter, 44,630 of tobacco, and 1,159 bales of cotton. There were 1,238 horses, 1,436 milch cows, 2,869 other cattle, 5,649 sheep, and 13,508 swine; 8 flour mills, 1 manufactory of pig iron, and 3 leather-currying establishments. Capital, Decaturville. **III.** A S. E. county of Indiana; area, 372 sq. m.; pop. in 1870, 19,053. It is drained by several small streams, and has a level or gently undulating surface; the soil is a rich loam, resting on a basis of limestone. The Indianapolis, Cincinnati, and Lafayette railroad passes through it. The chief productions in 1870 were 382,304 bushels of wheat, 960,167 of Indian corn, 72,712 of oats, 51,074 of potatoes, 12,034 tons of hay, 194,402 lbs. of butter, and 43,725 of wool. There were 6,259 horses, 4,491 milch cows, 9,328 other cattle, 13,810 sheep, and 29,818 swine; 9 manufactories of carriages and wagons, 6 of bricks, 1 of furniture, 10 of saddlery and harness, 3 of woollen goods, 8 flour mills, and 8 saw mills. Capital, Greensburg. **IV.** A S. county of Iowa, bordering on Missouri, and intersected by Grand river; area, 528 sq. m.; pop. in 1870, 12,018. A great part of the land is occupied by prairies, interspersed with numerous clusters of hard timber, scattered along the streams. The chief productions in 1870 were 83,238 bushels of wheat, 401,879 of Indian corn, 124,120 of oats, 37,617 of potatoes, 14,343 tons of hay, 166,897 lbs. of butter, and 67,430 of wool. There were 4,298 horses, 3,444 milch cows, 6,349 other cattle, 19,168 sheep, and 15,053 swine; 7 flour mills, 10 saw mills, and two woollen factories. Capital, Leon.

DECATUR, a village of Georgia, capital of De Kalb county, on the Georgia railroad, 5 m. E. of Atlanta; pop. in 1870, 401. It is noted for its beautiful situation and healthy climate, and is the seat of two seminaries. About 6 m. E. of the village is Stone mountain, an isolated granite rock, nearly 2,200 ft. high. A battle was fought here, July 20, 1864, between a portion of Sherman's army, under Gen. Thomas, and the confederates under Gen. Hood, who had just succeeded Gen. J. E. Johnston in the command of the confederate forces in the west. In Sherman's advance toward Atlanta, Thomas and Schofield had reached Decatur. Hood undertook to overthrow this portion while it was separated from the remainder of the Union army. The attack was partially successful on the Union left, where the confederates gained some ground; but on the right, held by Hooker, where the action was most severe, the assailants were repulsed, and at dusk the confederates abandoned the attempt, leaving their dead and many of their wounded on the field. The Union loss was 1,500 in killed and wounded. The confederates left on the field 500 dead and 1,000 severely wounded, this being only a part of their entire loss, which Gen. Sherman estimated at not less than 5,000.

DECATUR, a city and the capital of Macon co., Illinois, on the right bank of the Sangamon river, about 40 m. E. of Springfield; pop. in 1870, 7,161. The Illinois Central, the Toledo, Wabash, and Western, the Decatur, Sullivan, and Mattoon, the Monticello, and the Pekin, Lincoln, and Decatur railroads centre here. It is situated in a productive agricultural region, is a place of considerable trade, and contains a number of handsome buildings, including the court house. There are about 15 churches of different denominations; 24 public schools, with an average attendance of 1,376 pupils; and one daily and four weekly newspapers. There is a large rolling mill.

DECATUR. I. Stephen, an American naval officer, born in Newport, R. I., in 1751, died at Frankford, near Philadelphia, Nov. 14, 1808. He obtained the command of a vessel in the merchant service at a very early age. During the war of the revolution he commanded several privateers, and acquired some reputation by the capture of English ships. At the commencement of hostilities with France in 1798, he was made captain in the navy, and was appointed to the command of the Delaware of 20 guns, in which he cruised on the American coast and in the West Indies, capturing at different times the French privateers Le Croyable and Marsuin. In 1800 he commanded a squadron of 13 sail on the Guadeloupe station, the Philadelphia frigate of 38 guns being his flag ship. He was discharged from the service under the peace establishment in October, 1801, and engaged in commercial pursuits in Philadelphia. **II. Stephen,** jr., an American naval officer, son of the preceding, born at Sinnepuxent, Md., Jan. 5, 1779, killed in a duel near Bladensburg, Md., March 22, 1820. He entered the navy as midshipman in 1798, was promoted to a lieutenancy in 1799, and served in both grades in the frigate United States, on the West India station, under the command of Com. John Barry. In May, 1801, he joined the frigate Essex, Capt. William Bainbridge, one of a squadron sent to the Mediterranean, under the command of Com. Richard Dale, in consequence of hostile demonstrations by Tripoli. Dale returned home in December, 1801. Under his successor on the station, Com. Valentine Morris, Decatur was actively employed as first lieutenant of the frigate New York, Capt. James Barron. At Malta he acted as second in a duel between Midshipman Joseph Bainbridge and

an English officer, which terminated fatally to the latter. The surrender of all concerned to the civil authorities was demanded by the governor, and it was therefore deemed prudent for Decatur to return to the United States. In November, 1803, the squadron, materially strengthened, was placed under the command of Com. Edward Preble, Decatur serving in it at first in command of the brig Argus, and subsequently of the Enterprise. While in this service he distinguished himself by recapturing and burning the frigate Philadelphia, which had fallen into the enemy's hands and was in the harbor of Tripoli. With a crew of 70 men and 13 officers he sailed into the port on the night of Feb. 16, in a captured Tripolitan vessel which had been named the Intrepid. By the aid of a Greek pilot and interpreter, and under pretence that they were in distress, the Americans got alongside the frigate before their character was discovered. They instantly boarded the vessel, and after a slight resistance captured her. Combustibles were spread about and fired, and by the light of the burning frigate the Intrepid sailed out of the harbor. On the part of the Americans but a single casualty occurred, one man being slightly wounded. The loss sustained by the enemy could never be correctly ascertained. Many swam ashore or to the nearest cruisers, and 20 were reported killed. For this gallant exploit a captain's commission was conferred upon Decatur, a sword was presented him by congress, and two months' pay was voted to each of his officers and crew. In the subsequent attacks upon Tripoli by Com. Preble's squadron Decatur bore a distinguished part, and especially in that of Aug. 3, 1804. On this occasion, with three Neapolitan gunboats under his command, he assisted in the attack upon a flotilla of gunboats protected by batteries on shore, and a ten-gun brig. Each of his boats, singling out an opponent, boarded and carried her, after a desperate hand-to-hand conflict with cutlass and pistol. Decatur, on taking possession of the boat which he first assailed, took her in tow, and bore up for the next one to leeward, which he boarded with most of his officers and men, himself attacking and after a desperate struggle slaying the Tripolitan commanding officer, who had just killed his brother, Lieut. James Decatur, after pretending to surrender to him. The two boats captured by Decatur contained 80 men, of whom 52 are known to have been killed or wounded. The American loss was 14 killed and wounded. On Aug. 7, just at the conclusion of another attack in which Decatur participated, his commission as captain arrived, and he subsequently served at one time in the Constitution as flag captain, and at another in the frigate Congress. On June 3, 1805, peace was proclaimed. Between the close of the Tripolitan war and the declaration of war with England in 1812, he was variously employed, at one time superintending the construction of gunboats. After the affair of the Chesapeake our ships of war were for the most part kept upon our own coast, in anticipation of hostilities with England, and Decatur was then in command of a squadron, the frigate United States, 44, bearing his flag. On Oct. 25, 1812, Decatur, still in command of the United States, fell in with and captured, after an action of an hour and a half, the British frigate Macedonian, 49, Capt. Carden. Although the American ship was the heavier, her superiority was certainly not in proportion to the execution done in this combat. The Macedonian, being to windward, could choose her distance, and the action for the most part was at long shot. Her mizzen mast, fore and main topmasts, and main yard were shot away, and 100 round shot struck her hull, while of her 300 men 36 were killed and 68 wounded. The United States lost a topgallant mast and was otherwise somewhat cut up aloft, but her hull was very slightly injured; 5 men were killed and 7 wounded. The Macedonian was taken into New York. For this capture congress voted a gold medal to Decatur, and a silver one to each commissioned officer under his command. On May 24, 1813, Decatur sailed from New York in command of a squadron, consisting of the United States (flag ship), the Macedonian, now an American frigate, and the Hornet sloop of war. The Sandy Hook channel being blockaded, he passed through Long Island sound, and on June 1 attempted to go to sea by running out past Montauk point. He was intercepted by a British squadron of much superior force, and compelled to enter the harbor of New London, where he remained closely blockaded until the summer of 1814, when he was transferred to the command of a squadron, consisting of three vessels of war and a store ship, destined for a cruise in the East India seas. So closely was New York blockaded that he did not get to sea until the middle of January, 1815, when he sailed at midnight. The flag ship President, 44, struck, and was much injured in passing the bar. She was pursued by four ships and brought to action about 3 P. M. on the following day by the frigate Endymion of 40 guns. A running fight took place, which lasted about eight hours, when the Pomona, 38, another of the pursuing ships, also closed, and, obtaining a position upon the weather bow of the President, fired a broadside into her; and as at this moment the Tenedos, 38, was fast closing upon the quarter, and the razee Majestic was within gun-shot astern, Decatur surrendered. The loss of the President was very severe; 80 were killed or wounded. The loss of the Endymion was 11 killed and 14 wounded. The President was carried into Bermuda, and both she and the Endymion were dismasted in a gale before reaching port. Decatur was soon paroled, and on his return to the United States was honorably acquitted by a court of inquiry for the loss of the ship. On May 21, 1815, with a squadron under his command con-

sisting of three frigates, one sloop of war, and six brigs and schooners, he sailed from New York for the Mediterranean to act against Algiers. On June 17, off Cape de Gatte, on the coast of Spain, the squadron fell in with and captured the Algerine frigate Mashouda, 46, after a short running fight, in which the Algerine admiral, Rais Hammida, and nearly 100 of his officers and men, were killed or wounded. The prisoners amounted to 406. On board the Guerriere, Decatur's flag ship, 14 were killed or wounded. Two days later an Algerine brig of war, the Estidio, 22, was captured off Cape Palos after a short resistance. The prizes were sent into Cartagena, and the squadron arrived off Algiers June 28. On the 30th, just 40 days after leaving New York, Com. Decatur and William Shaler, the commissioners, concluded a treaty with the dey, by which demands upon the United States for tribute were forever abolished. A mutual liberation of prisoners and restitution of property was made, and it was stipulated that in the event of future wars Algiers was not to treat American prisoners as slaves. As a personal favor to the dey, the captured frigate and brig were restored. Decatur then proceeded with his squadron to Tunis and Tripoli, made reclamations upon those powers for their depredations upon American commerce during the war with England, demanded the release of captives, and obtained prompt redress. As soon as this service was concluded, most of the squadron returned to the United States. In November, 1815, Decatur was appointed navy commissioner, which position he held until his death. He was killed in a duel with Com. James Barron, which grew out of the affair between the Chesapeake and Leopard. Both fell at the first fire, Decatur mortally and Barron very severely wounded.

DECAZES, Élie, duke, a French statesman, born at St. Martin du Laye, Gironde, Sept. 28, 1780, died Oct. 24, 1860. He studied law at Libourne, became an advocate, and in 1805 went to Paris, where he married the daughter of Count Muraire, president of the court of cassation. In 1806 he went to Holland by invitation of King Louis, whom he served even after his abdication in 1810. He officiated as secretary of Letizia Bonaparte, but joined the cause of the Bourbons in 1814, and under the second restoration discharged the duties of prefect of police at Paris. He became intimate with Louis XVIII., and in 1815 was made minister of police. By his conciliatory policy he gave umbrage to the ultra royalists, without giving satisfaction to the extreme liberal party. In 1818 he was appointed minister of the interior, and in November, 1819, prime minister. The opposition of the royalist party broke out with renewed virulence on the assassination of the duke de Berry in 1820, when a deputy openly charged Decazes with being an accomplice of the murderer. He then resigned, and Louis XVIII. made him a duke and ambassador to England, where he remained till December, 1821. Under the reign of Charles X. he opposed the extreme measures of the government, and after the revolution of 1830 adhered to Louis Philippe. In 1834 he was appointed grand referendary of the chamber of peers. Subsequently he devoted himself to the establishment and superintendence of large iron works at Decazeville in Aveyron. On his marriage in 1818 with his second wife, Mlle. de Saint-Aulaire, a relative of the duke of Holstein-Glücksburg, the title of duke of Glücksburg was conferred on him by Frederick VI. of Denmark.

DECAZEVILLE, a town of France, in the department of Aveyron, 20 m. N. N. E. of Villefranche; pop. in 1866, 7,106. It has coal and iron mines, and its blast furnaces and rolling mills are among the best in the country. It was founded by Duke Élie Decazes in 1825.

DECCAN, The (Sansk. *Dackshina*, the south), a term formerly applied to all that part of India S. of the Nerbudda river, but since the Mohammedan invasion restricted to the region between the Nerbudda and Kistnah, or between lat. 16° and 23° N., extending from the Arabian sea to the bay of Bengal, and including the provinces of Candeish, Aurungabad, Beeder, Hyderabad, Bejapoor, Berar, Gundwanna (most of the Central Provinces), Orissa, and the Northern Circars. The general aspect of the Deccan is a triangular table land supported by the mountain walls of the Ghauts on the east and west, and by the Vindhya range on the north. The dip of the country is toward the east, all the large rivers flowing to the bay of Bengal. The principal of these are the Godavery and the Mahanuddy. The declivity of this table land facing the bay of Bengal consists of a series of terraced steeps, abrupt but not precipitous. The interior table land is mostly rolling prairie.—The first irruption of Mohammedans from the north into the Deccan took place in 1294, under Ala ed-Din, afterward king of Delhi. He was followed by Mohammed Togluk, who about 1325 completed its subjugation. Revolts followed, and wars for 300 years, ending in distribution and redistribution of the territory, until in 1686 it passed under the sway of the Mogul emperor Aurungzebe. After his death it fell piecemeal into the hands of the Mahrattas, and was subsequently broken up into the feudal sovereignties which still exist in name. About the middle of the last century British influence became predominant; and by conquest and annexation, especially since 1818, the whole Deccan has come under British control, although some portions are nominally governed by native rulers.

DECEMBER, the 12th and last month of the year, consisting of 31 days. With the Romans it was the 10th month, whence its name (from *decem*, ten); and after the change in the calendar by which the beginning of the year was transferred from March to January, it still retained its old name. In the Athenian cal-

endar the last half of Poseidion and the first half of Gamelion correspond to December. In the French revolutionary calendar December is represented by the last two thirds of Frimaire and the first third of Nivose. As the winter solstice falls in the month of December, the average length of the days is less and of the nights greater than in any other month of the year.

DECEMVIRS (Lat. *decemviri*, ten men), the title of several bodies of magistrates in ancient Rome. The *decemviri legibus scribendis*, appointed to digest a written code of laws, were first elected in 451 B. C. The tribune C. Terentius (or Terentillus) Arsa, after a violent exhibition of the grievances of the plebeians and the usurpations of the patricians, about 460 proposed the appointment of ten commissioners to digest a regular body of laws which should be binding alike upon every citizen. This compromise between the two orders was accomplished after nine years of continued struggle. An embassy was sent to Greece to obtain information concerning the laws of the different states, and particularly concerning those of Solon; and after its return ten distinguished patricians were appointed for a year, with supreme power, to frame the new laws. They entered upon their work with zeal and diligence, and exercised their power with justice, impartiality, and moderation, each presiding in turn day by day, and he only using the fasces. The new laws, engraved on ten tables of brass, were placed in the forum and sanctioned by general acclamation, as well as by the sacred rites of the augurs. But two additional tables being required, a new decemvirate was elected for the next year, in which the patrician Appius Claudius managed to be reëlected, and to introduce a few plebeian members. He thus became the favorite of the people, while aiming to become their master. The laws were completed, and afterward known under the name of "laws of the twelve tables," and were admired for their wisdom, which, according to Cicero, surpassed that of all the books of philosophy. But now the decemvirs changed their conduct, exercised their power over all classes with oppressive rigor, and by terror maintained themselves in office after the expiration of their term. The attempted rape of Virginia by Appius Claudius, under the guise of a public judgment, and the killing of the virgin by her own father to save her honor, brought about the overthrow of this decemvirate.—The *decemviri litibus judicandis* were a judicial magistracy, established at an uncertain date. Their authority extended over matters relating to persons and taxable property, and they had the management of the *subhastationes*. Under the emperors they were the presidents of the centumviral court.—The *decemviri sacris faciundis* (or more briefly *sacrorum*) were a college of priests for the interpretation of the Sibylline books, established about 368 B. C., instead of the ancient patrician *duumviri;* they were chosen for life, partly from the patrician, partly from the plebeian order, and had the management of the Apollinian and secular games. At a later period their number was increased, probably by Sulla, to 15.

DE CHARMS, Richard, an American clergyman and author, born in Philadelphia, Oct. 17, 1796, died there, March 20, 1864. In 1793 his father, a physician, of Huguenot descent, emigrated from England to America, and died of yellow fever a few weeks before the birth of his son. The latter when 14 years of age supported his mother and himself by working in a printing office, until ill health compelled him to desist. Subsequently he found means to enter Yale college, at which he graduated in 1826, and at the suggestion of a female friend, to whom he was indebted for his education, commenced the study of theology in London, with a view of fitting himself for the ministry of the New Jerusalem or Swedenborgian church. During the two years he remained in England he supported himself by his labor as a printer. He was settled successively at Cincinnati, Philadelphia, and Baltimore, and published several collections of sermons and lectures on the fundamental doctrines of Swedenborg. He established the "New Jerusalem Magazine" in Boston, the first three numbers of which were printed by his own hands, and edited the "Precursor" and "New Churchman." His chief work is "The New Churchman Extra" (1 vol. 8vo), which is devoted to polemics and church history.

DECIGRAMME. See GRAMME.

DECIMAL (Lat. *decem*, ten), a number in a geometrical progression whose ratio is 10; that is, in a progression by tens, hundreds, or by tenths, hundredths, and so on. Decimal notation is the system of uniting numbers in which the value of a figure increases tenfold with every remove to the left, and decreases to a tenth by every remove to the right, from a point between the units and tenths designated by a dot. Numeration by decimals was doubtless suggested by the fingers of the hand, and therefore may be called natural; but other systems, as the binary and duodecimal, possess certain advantages over it. So long, however, as arithmetic uses a decimal ratio, it will be most convenient, for all purposes of calculation, to have money, weights, and measures divided decimally, as the first is in the United States, and all are to a great extent in France.

DECIUS, Caius Messius Quintus Trajanus, emperor of Rome from 249 to 251, born at Bubalia in Pannonia, of unknown parentage. He became a Roman general and senator, and when the legions of Mœsia revolted against the emperor Philip, he spoke in the senate against submissive measures, and was sent to bring them back to their allegiance. But the revolted army compelled him, under threats of death, to assume the purple, and to march at their head against Philip. He met and conquered the army of the emperor at Verona,

toward the end of 249. Philip was slain, and Decius ascended the throne. His short reign is remarkable for a severe persecution of the Christians, for an attempt to restore the ancient independent censorship, and with it the former virtuous manners and habits of the republic, and for the first invasion of the Goths from the neighborhood of the Black sea. To defend the northern provinces of the empire against this people, Decius hastened to the Danube, but fell with his son in battle. He was succeeded by his general Gallus, to whose treachery the loss of the battle has been attributed.

DECIUS MUS, Publius, the name of three celebrated Roman plebeian consuls, father, son, and grandson. The first distinguished himself, in the year 343 B. C., in the war against the Samnites, and commanded in 340, with his colleague Titus Manlius Torquatus, against the Latins, who were then trying to shake off the yoke of the Romans. Before a decisive battle, it is said, both consuls had a vision informing them that the infernal gods required one of the contending armies and the opposing commander to be devoted to them. The consuls agreed that he whose wing should first waver should devote himself and his enemies to death. The wing under Decius gave way; he immediately caused the pontifex maximus to perform the consecrating rites, wrapped himself in his robe, rode into the thickest of the enemy, and perished. His legions rushed on anew, and were victorious. His son did likewise in the battle of Sentinum (295), where he was opposed to the Gauls. Similar heroism is attributed to the grandson in a campaign against Pyrrhus and the Tarentines (279), but he survived.

DECIZE (anc. *Decetia*), a town of France, in the department of Nièvre, 18 m. S. E. of Nevers; pop. in 1866, 4,594. It is on an island in the Loire, at the junction of the Aron, and at the head of the Nivernais canal, connected with one bank of the Loire by a suspension, and with the other by an immense stone bridge. On a rock which forms the highest point of the island stands an old castle formerly belonging to the dukes of Nevers, but used since 1849 as a hospital. Among the other buildings is a church of the 10th century. The country around Decize contains some of the richest coal mines in France, and the town has large iron and tin works and an extensive manufactory of bottles.

DECKEN, Karl Klaus von der, a German traveller, born at Kotzen, Prussia, Aug. 8, 1833, killed at Berderah, E. Africa, Oct. 3, 1865. He entered the Hanoverian army in 1850, but left the service in 1860, having begun his travels in Africa as early as 1857. In May, 1861, he set out to explore the lake country of eastern Africa, and returned to Zanzibar Dec. 31, 1862, having made the ascent of Mount Kilimanjaro to the height of 13,000 ft. In May, 1863, he made explorations on the coast, after which he returned to Europe. In October, 1864, he went again to Zanzibar, with two steamers constructed at his own expense in Hamburg. In August, 1865, he commenced the ascent of the river Juboo, in company with several other travellers. They were attacked on Oct. 1 by the natives, and forced to take refuge in boats, Decken and Dr. Link, a physician of Berlin, losing their lives. The results of his explorations have been given by Kersten in *Reisen in Ostafrika in den Jahren* 1859–'65 (4 vols., Leipsic, 1869–'71).

DECKER, or **Dekker, Jeremias de,** a Dutch poet, born at Dort about 1610, died in Amsterdam in November, 1666. He wrote a paraphrase of the Lamentations of Jeremiah, translations and imitations of classic poets, and a great number of epigrams. His most celebrated poem, the "Praise of Avarice" (*Lof der Geldzucht*), has earned a place beside the *Moriæ Encomium* of Erasmus. A first edition of his poems appeared in Amsterdam in 1656, another with additions in 1702, and a complete collection in 1726. Selections of his epigrams are in Geysbeck's *Epigrammatische Anthologie* (1821), and of his poetry in Siegenbeck's *Proeven van Nederduitsche Dichtkunde* (1823).

DECKER, or **Dekker, Thomas,** an English dramatic author, of the reign of James I., supposed to have died about 1638. He quarrelled with Ben Jonson, who, representing himself as Horace, satirized Decker as Crispinus in "The Poetaster," to which Decker replied by attacking Jonson in his "Satyromastix" under the name of "Young Horace." Decker wrote plays in conjunction with Massinger, Webster, and Ford, and was the sole author of several, of which "The Honest Whore" is considered the best; Hazlitt says it "unites the simplicity of prose with the graces of poetry." He wrote also many small works of a humorous cast, in the most important of which, "Gull's Hornbook" (London, 1609; new ed. by Dr. Nott, 4to, 1812), he ridicules the follies of London fashionable life. He was very poor, and is said to have spent three years in prison.

DECRETALS, letters sent by the early popes to different churches, containing decrees deemed necessary for the maintenance of discipline or the good of religion. The term relates to the *Decretum* of Gratian, consisting of decrees, and forming the chief body of church laws. The collection or code of Dionysius Exiguus, a learned Scythian monk (died about 540), was published in Rome. Its second part is made up of the decretals of several popes, the earliest of whom is Siricius (384). This code, with the additions made by successive pontiffs, was presented to Charlemagne by Adrian I., and this copy is known as *Codex Canonum*. About 845 appeared the false Isidorian decretals, a collection made as some think in Spain, according to others in the west of Gaul. It was an attempt to codify scientifically the existing church laws, and contains three classes of documents: some perfectly genuine, and attributed to their real authors; others substantially so, but published under the names of councils and popes to whom they did not belong; and others alto-

gether spurious. Beveridge has conclusively shown that all the decrees or letters thus falsely attributed to certain authors were mere tissues of texts selected from the canons of councils, epistles of popes, and works of ecclesiastical writers, especially of the 5th and 6th centuries. This pseudonymous author, Isidore Mercator or Peccator, is not to be confounded with Isidore of Seville (died in 636), whose code continued up to the 12th century to be the basis of ecclesiastical law in Spain, and was held in great reverence throughout the western churches. In 1151 appeared the compilation of the Benedictine monk Gratian, entitled at first *Concordantia Discordantium Canonum*, and afterward called *Decretum Gratiani*. In 1234, under Gregory IX., was published the collection of Raymond de Pennafort, comprising five books of decretals. This is the first complete body of ecclesiastical laws given to the world with the approbation of the Roman see. To these five books Boniface VIII. added the *Sextus Decretalium*, or the "Sext," in 1298; in 1308 were added the "Clementines," or constitutions of Clement V.; and in 1317 the *Extravagantes* of John XXII., embodying decrees and laws which had no fixed place in the code. The *Extravagantes communes* were added by later pontiffs. These decretals, including the *Decretum* of Gratian, form the *Corpus Juris Canonici*, and comprise all subjects which in that age were within the cognizance of the ecclesiastical courts, as the conduct of the clergy, matrimony and divorce, inquisition of criminal matters, purgation, penance, excommunication, &c. (See CANON LAW.)

DECURIONES, magistrates in the provincial *municipia* of the Roman state corresponding to the senate at Rome. In the later times of the republic, the state was considered in two distinct parts, Italy and the provinces. Italy consisted of a multitude of commonwealths, whose citizens had become members of the sovereign people, maintaining the internal administration of their own affairs. Originally the popular assemblies had the sovereign power in the municipia, and conferred the executive authority upon the decuriones. They consisted at first of ten men, but in later times they frequently numbered more, and sometimes even amounted to 100. Each *curia decurionum* was presided over by two members who were called duumviri, and whose powers within their municipium resembled those of the Roman consuls during peace. Under the republic the whole administration of the internal affairs of their respective cities was in the hands of the decuriones; but after the establishment of the empire they exercised nearly all the circumscribed rights of the communities, though finally they were little more than receivers of taxes. The decuriones were created by election on the kalends of March, and each was required to be at least 25 years old, and to possess a certain income.

DEDHAM, a town and the capital of Norfolk co., Mass., on Charles river, 10 m. S. W. of Boston; pop. in 1870, 7,342. It is connected with Boston by a branch of the Boston and Providence railroad, and is a favorite residence for persons doing business in that city. The court house is a handsome granite building, having a Doric portico on each front. The jail is of hewn stone and well arranged. A canal 3 m. long, from Charles to Neponset river, gives a good supply of water power, which is used chiefly for cotton and woollen mills. Of the latter there are two, with a capital of $900,000, and of the former one, with a capital of $30,000. There are two manufactories of cabinet ware, two of castings, &c., a rolling mill, a carpet factory, two tanneries, and a national bank. There are good schools, including a high school, churches of various denominations, and two weekly newspapers.

DEE. I. A river of N. Wales, rising among the mountains of Merionethshire, in a small lake called Bala or Llyn Tegid, flowing N. E. through the vale of Llangollen, and forming part of the boundary between Cheshire and Denbighshire. Near Aldford it enters Cheshire, and passes on to Chester, which it nearly encompasses, and where it has a width of 300 ft. Thence it is conveyed 9 m. in an artificial channel along the marshes, and finally falls into the Irish sea through an estuary 14 m. long and from 2 to 6 m. broad. Its length, exclusive of the estuary, is about 80 m. It is much obstructed by sand banks at its mouth, and is not naturally navigable, but has been improved to admit of the passage of small vessels to a point 2 or 3 m. above Chester. **II.** A river of Aberdeenshire, Scotland, rising in the Cairngorm mountains, flowing E. about 90 m., and entering the North sea at Aberdeen. It is noted for its romantic scenery, and has valuable salmon fisheries. **III.** A river of Kirkcudbrightshire, Scotland, with valuable salmon fisheries. It enters Solway frith after a course of about 50 m. **IV.** A river of Ireland, in the counties of Meath and Louth, 21 m. long, flowing into Dundalk bay.

DEE, John, an English astrologer, born in London, July 13, 1527, died at Mortlake in 1608. He was educated at St. John's college, Cambridge, and attained much proficiency in science. After a short tour in Holland he was elected fellow of Trinity college, and in 1548 took his degree of master of arts. Incurring the suspicion of being a conjurer, he repaired to the continent, resided two years at the university of Louvain, and visited France, spending some time at the college of Rheims, where he gave lectures on mathematical theorems, elaborated into metaphysical and astrological dogmas, which were received with great applause. On his return to England in 1551, Edward VI. conferred on him a pension of 100 crowns, which he afterward relinquished for the rectory of Upton-on-Severn. Shortly after the accession of Mary he was accused of practising against the queen's life by enchantment, and was subjected to a protracted trial and

long imprisonment, but released in 1555. On Elizabeth's accession he was introduced to her, and was requested to name a propitious day for the coronation. In 1564 he returned to the continent, ostensibly to present the emperor Maximilian with a copy of a work he had dedicated to him, but probably as a secret agent of the English government. When in 1571 he fell dangerously ill abroad, the queen sent two of her own physicians to his relief. After his return he settled at Mortlake, Surrey, where he calculated horoscopes and nativities. In 1576 the people in the neighborhood attacked his house, and he barely escaped with his life, his library, furniture, and apparatus being all destroyed. He was sent abroad again in 1578 to consult with German physicians touching Elizabeth's health, and probably also for some secret political object. In 1581 he made the acquaintance of Edward Kelly, an apothecary whose ears had been cropped for forgery. He pretended to be as sincere a devotee to magic as was Dee himself; and with his assistance spirits were raised and information obtained by use of a crystal or magic mirror, in which, after invocation, responses were granted to their inquiries. In 1583 they made the acquaintance of Albert Laski, a Polish nobleman, and accompanied him abroad. They exhibited before the emperor at Prague, and resided there for a time, asserting that they had the art of transmuting metals, enabling them to live in considerable splendor. At Prague they separated. Dee returned to England, and was appointed on Dec. 8, 1594, chancellor of St. Paul's cathedral, and in the following year warden of Manchester college, which he left in 1602 or 1604 to return to his old residence near London. A catalogue of his printed and published writings is contained in his "Compendious Rehearsal of his Life and Studies," prepared in 1592, on the appointment of a commission by Elizabeth to inquire into his circumstances. His diary was printed in 1842 by the Camden society, together with the catalogue of his library of MSS., made before the pillage of his house by the mob, and containing the titles of several mediæval works, not now known to be in existence. Dee's "Relation of what passed for many years between him and some Spirits," edited by Casaubon, appeared in London in 1659. One of his magic mirrors is in the British museum.

DEED, a term originally employed to express an act for the disposition of lands, which at an early period was by the actual or symbolical delivery of possession in the presence of witnesses; but when a writing was substituted in place of this formality, the same name continued to be applied. Strictly, any instrument in writing, sealed and delivered, is a deed; but the word is most commonly applied to those instruments only whereby real estate, or some interest therein, present or prospective, is transferred or created. In English conveyancing, a deed to which there are several parties is called an indenture, and properly counterparts should be made on parchments, the edges of which should be cut (indented) like the teeth of a saw to correspond with each other. A deed poll (polled or shaved even) is one executed by a single party. The term indenture is used in this country simply as expressing that there are several parties; and though in form the deed purports to be executed by all the parties named, yet in fact the ordinary deed in lands is executed by the grantor only. The deed chiefly used in the United States is what in the English law is called a conveyance by bargain and sale. (See Bargain and Sale.) No particular form, however, is required if the intention be sufficiently expressed, and a very simple one will be found in general use in most of the states; though very cumbrous forms are still employed more or less, particularly by old conveyancers, which combine the various operative words of the several English conveyances; as give, grant, bargain, sell, remise, release, alien, enfeoff, and confirm; a collocation of words which has this advantage, that the form may fit almost any possible case. In some states a short form is given by statute, and the effect of the terms employed, as covenants or otherwise, is prescribed. The consideration for a deed may be either good, *i. e.*, natural affection between near relations, or valuable, *i. e.*, that which has a pecuniary value, as money or other property, or marriage; but a deed without any consideration, deliberately made and delivered, is perfectly good as between the parties, and as against all other persons except creditors and subsequent purchasers. If, however, a voluntary conveyance, or one made on good consideration only, or even on a valuable consideration, if wholly inadequate, would have the effect to hinder, delay, or defraud the creditors of the grantor in the enforcement of their demands, it may be avoided at their suit; as it may also at the suit of a subsequent purchaser who has bought in good faith and without notice of it, actual or constructive. In common law conveyances it was not necessary that the consideration should be expressed, nor was it necessary to prove one, the conveyance itself being an act of such formality that the law raised a presumption of a consideration; but in deeds which were introduced under the doctrine of uses held in courts of equity, it was necessary that a consideration should either be expressed in the deed, in which case it could not be controverted by the parties or their privies, or the deed should purport to be upon a valuable consideration, and then one might be proved when the deed was brought in question. As it is not necessary to name any particular sum, the nominal sum of $1 is often expressed; but the actual consideration, and whether paid or not, may always be inquired into, when essential for other purposes than the mere validity of the deed, notwithstanding a sum has been named or the receipt acknowledged. It has indeed been held that in order to prove any

other in addition to a pecuniary consideration, it is necessary that there should be some expression in the deed to warrant it, as "for divers other considerations." These rules, which had respect to deeds of bargain and sale, will generally apply to the simpler forms which have been substituted.—A deed was at common law the most artificial of all forms of contract. Certain operative words belonged to each of the different conveyances, and no others could be used with the same legal effect, as enfeoff or give (*feoffavi* or *dedi*), in the conveyance of the fee; give or grant (*dedi* or *concessi*), in the conveyance of incorporeal hereditaments; demise, grant, and to farm let, in a lease; and so of others. A second peculiarity was that certain obligations resulted from the use of these terms without being otherwise expressed, which were called covenants in law. Thus to the word "enfeoff" or "give" was annexed a warranty by which the grantor vouched for the title, and upon failure thereof was bound to render lands of equal value; but this being by statute limited to the grantor, an express clause of warranty was introduced into the deed in order to bind his heirs. This gave rise to what Lord Coke declared to be "one of the most curious and cunning learnings of the law." The heir was bound upon the presumption of law that he had received from his ancestor an equivalent; and though he was not compelled upon failure of title to render an equivalent to the grantee unless he had himself received other lands by descent from the warranting ancestor, yet he was barred from making a claim to the lands warranted if he might have derived title from him who made the warranty. The same rule was unjustly extended to a case where the title to the warranted lands could not by possibility have come from the warrantor; as when the husband, having an estate for life as tenant by the curtesy in lands belonging to his wife, conveyed with warranty, the son who would have taken as heir of the mother was barred from claiming the estate. This is the doctrine of lineal and collateral warranties, to understand which fully it is necessary to bear in mind that it was first introduced for the purpose of avoiding the old feudal rule of non-alienation of lands without consent of the heir. By various statutes in England, collateral warranties are now abrogated, except when assets have descended from the ancestor who warranted. Both lineal and collateral warranties have been abolished in the state of New York, and it is further declared that no covenant shall be implied in any conveyance of real estate, and heirs and devisees are liable upon the express covenant of the ancestor or testator only to the extent of lands which descend or are devised to them. Corresponding statutes have been adopted in many of the other states. In the absence of such statutes it is held that the word "give" implies a warranty during the life of the grantor; that the words "grant, bargain, and sell" do not imply a covenant of title in a conveyance in fee, but that "grant" or "demise" does imply such a covenant in a lease for years. Express covenants have both in England and this country taken the place of the ancient warranty. The covenants usually inserted are these: 1, that the grantor is lawfully seized; 2, that he has good right to convey; 3, that the land is free from encumbrances; 4, that the grantee shall quietly enjoy; 5, that the grantor will warrant and defend. These are personal covenants, and the remedy for a breach is only against the covenanter or against his heirs or assigns to the extent of lands descended or devised. The covenants of warranty and for quiet enjoyment are broken only by actual eviction; hence they are said to run with the land, and may be taken advantage of by the heirs or assignees of the grantee. But the other covenants, not being prospective, but being broken, if at all, at the time of the execution of the deed, become what are called *choses in action*, and are not assignable. The measure of damages for a breach of these covenants is the price paid for the lands with interest, the rule being founded upon the supposed value of the lands at the time of the execution of the deed; and the rule is the same although the land has since risen in value, or the grantee has himself made improvements. The covenant against encumbrances may be an exception, as the damages recoverable is the sum paid to discharge the encumbrance, and this may in some cases exceed the consideration or price of the lands. As to the parties to a deed, the general rules have been stated in the article Contract. An important innovation has, however, been recently made in many of the states in respect to the capacity of a married woman to convey, which will be more properly considered under the title Husband and Wife.—The recording of deeds is universal in this country; and although the suggestion was derived from a local practice in some parts of England, yet it is still very limited in that kingdom, being probably uncongenial to the large landed proprietors, who usually have private family arrangements which they would be unwilling to make subject to public inspection. For the purpose of recording, it is a requisite in all the states of the United States that the deed should be acknowledged or proved before some officer authorized to take such acknowledgment or proof, whose certificate is to be affixed to the deed; and in several of the states two subscribing witnesses are required. In some states a subscribing witness is not required when the deed is acknowledged, but is necessary if the deed is to be proved for the purposes of record. The general provision is, that an unrecorded deed is inoperative against a subsequent purchaser in good faith and for a valuable consideration, whose deed shall be first recorded. It is, however, understood that actual knowledge of a previous deed by the subsequent purchaser, or such notice as should have put him

upon inquiry, and if followed up would have led to the requisite information, will preclude the subsequent purchaser from taking advantage of the want of record; in other words, with such knowledge or notice, he will not be held a purchaser in good faith within the meaning of the recording laws. As between the parties to a deed, neither acknowledgment nor record is in general required, though in some states acknowledgment is necessary, and in others the deed is void as against subsequent purchasers unless recorded within a time fixed by statute.

DEEMS, Charles F., D. D., an American clergyman, born in Baltimore, Md., Dec. 4, 1820. He graduated at Dickinson college in 1839, and soon after became agent of the American Bible society for the state of North Carolina. Resigning the agency, he became in 1840 professor of logic and rhetoric in the university of North Carolina, and retained this position five years, after which he was for a year professor of natural science in Randolph Macon college, Virginia. Returning to North Carolina, he was stationed as preacher at New Berne, and in 1846 was chosen delegate to the general conference of the M. E. church south, which met at St. Louis. While here he was appointed president of the Greensboro female college in North Carolina, where he remained five years. From 1854 to 1858 he was in the regular pastorate, and from 1858 to 1865 was presiding elder of the Wilmington and New Berne districts of the North Carolina conference. At the close of 1865 he went to New York, was occupied for a time in journalism, and subsequently engaged in establishing the "Church of the Strangers," of which he is now (1873) the pastor. Besides many sermons and addresses, he has published several volumes, among which are "The Home Altar," "What Now?" "The Annals of Southern Methodism," and "The Life of Jesus."

DEEP RIVER, one of the head streams of Cape Fear river, North Carolina. It rises in Guilford co., flows S. E. through Randolph co., then nearly due E. into Chatham co., where it unites with Haw river to form the Cape Fear. It is about 100 m. long, and furnishes good water power. It has been rendered navigable from its mouth to the coal mines in Chatham co.

DEEP-SEA SOUNDINGS. See ATLANTIC OCEAN, vol. ii., p. 69.

DEER, the common name applied to an extensive group of ruminating animals, embraced in the family *cervidæ*. This group, which includes animals varying in size from the small muntjac to the gigantic moose, is characterized in most genera by the presence in the males of solid horns arising from the frontal bone, falling off annually in the large species, and covered when first developed by a hairy skin. They are remarkable generally for their lightness and elegance, the velocity of their movements, and the timidity of their disposition; they are found in all parts of the world except Australia, and are valuable as furnishing food, clothing, and beasts of draught for many northern nations. The forms of the horns or antlers are various, being sometimes flat and palmated as in the moose, or nearly round and branching as in the stag; their substance is very different from horn, being compact and solid, without any central core like that of the antelope and ox family; their production is intimately connected with the generative function. In the young animal a kind of exostosis, or bony growth of great hardness, is perceptible on each side of the frontal bone; this increases rapidly, pushing the skin before it; the enlarged vessels are compressed and obliterated by the growing horn, the cutaneous envelope dies, and the exposed horn in time is cast off; under the wound, which rapidly cicatrizes, a new horn soon rises with a burr around it; during the rutting season the reproduction of the horn is most active, with considerable heat and irritation; when it is fully developed the skin falls as before, leaving the hard and bare horn, which falls and is reproduced; at each successive growth the horn increases in size and complexity, but its duration is the same. When the horns fall, the animal retires into the thick forest, not appearing among the females until these organs reappear; when the horns are covered, they are said to be "in the velvet." The origin of the horns is called the burr, the main shaft the beam, and the branches the antlers; the latter may be near the head, when they are termed brow antlers, or in the middle of the beam (median or bezantlers); the termination of the beam is sometimes styled a perch, and the small processes snags and prickets. The teeth of the deer are eight incisors in the lower jaw, and none in the upper, in their place being a callous pad; generally there are no canines, but these exist in the upper jaw alone in a few species; there is a space between the incisors and the grinders, the latter being six on each side in each jaw, with the crown marked by the disposition of the enamel in two double crosses, whose convexity is turned inward in the upper teeth, and outward in the lower. The feet end in two toes, each with its sharp hoof, resembling a single hoof which has been cleft; behind and above these are two small rudimentary toes or hoofs. The two metacarpal and metatarsal bones are united into a single cannon-bone. The head is long, and terminated in most by a muzzle; the ears are large, the pupils elongated, and the tongue soft; there are four inguinal teats. The skeleton is constructed for lightness and rapid springing motions; the neck is long to permit grazing, and the spines of the dorsal vertebræ are long and strong for the origin of the thick ligamentum nuchæ to support the ponderous head; the cavity of the skull is small, in conformity with the limited intelligence of the group. The internal structure is that of other

ruminants feeding only on vegetable substances; they have no gall bladder. The external covering consists of close and thick crisp hair, with a kind of wool next the skin in the species of cold regions; the general color is a variety of shades of brown, with rufous tints and white spots. The senses of smell, hearing, and sight are very acute, enabling them to detect their enemies at a distance. Under each eye in most is a sinus, which secretes largely a viscid fluid like tears, whence the French call these gland-containing sacs *larmiers;* they communicate with the nose by the lachrymal ducts; the secretion is the most profuse during the rutting season. Deer are capable of a certain degree of domestication, and the reindeer may be completely subjected to man; some species reside in thick forests, others in open plains, and others in swampy districts.—All the arrangements of this group are more or less artificial and unnatural; but there are several subdivisions generally admitted, founded on similarity of structure and on geographical limitation, which are of advantage in classification. Cuvier, De Blainville, and more especially Col. Hamilton Smith, made the horns the basis of division into subgenera; Mr. J. E. Gray and Dr. Sundevall have pointed out some other external distinctions which they believe more characteristic of genera and species than modifications in the form of the skull, teeth, and horns, as they are not changed by age, and are evident in both sexes. These are the form and extent of the muffle, and the metatarsal hair-covered glands on the hind legs. In the "Annals and Magazine of Natural History" (London, vol. ix., 1852, p. 413) is a paper by Mr. Gray, which presents a good synopsis of the varieties of deer. He divides them as follows: I. Those of snowy regions, with broad muzzle entirely covered with hair, expanded and palmated horns, short tail, and their fawns not spotted; containing (*a*) the alcine deer, with no basal anterior snag to the horns, and a small bald muffle between the nostrils, as in the genus *alces*, the elk or moose; (*b*) the rangerine deer, with a large basal anterior snag, close to the crown or burr, and no muffle, as in *tarandus*, the reindeer. II. Those of temperate and warm regions, with a tapering muzzle ending in a bald muffle; the fawns, and sometimes the adults, spotted; containing (*c*) the elaphine deer, with an anterior basal snag, the muffle broad and separated from the lip by a hairy band, and the tuft of hair on the outside of the hind leg above the middle of the metatarsus, as in *cervus*, the stag, and *dama*, the fallow deer; (*d*) the rusine deer, with an anterior basal snag, the muffle very high and not separated from the edge of the lip, and the metatarsal tuft as in the last division, as in the genera *panolia*, *rucervus*, *rusa*, *axis*, *hyelaphus*, and *cervulus;* (*e*) the capreoline deer, with no basal anterior snag, the first branch being at some distance above the burr, the suborbital fossa generally small, as in the genera *capreolus* (roebuck), *furcifer*, *blastocerus*, *cariacus* (American deer), and *coassus* (the brocket). The first and second of these divisions are confined to the northern parts of both continents; the third to Europe and Asia, with the exception of the wapiti of North America; the fourth to the warm regions of Asia; the fifth to America, except the roebuck of Europe, and the ahu of central Asia. The alcine deer will be described in the article Elk, and the elaphine under Stag; the rangerine have been described under Caribou. —Of the rusine group, or samboos, confined to southeastern Asia and its islands, the first genus in order is *panolia* (Gray), and the species sungnai deer (*P. Eldii*, Gray); in this genus the round horns curve backward and outward, with the upper part bent in and forked, rather expanded on the inner edge; the yellowish brown fur rigid and flattened; a large, oblong, and deep suborbital pit, with the nasal bones short, broad, and dilated behind; the frontal snag sometimes has a tubercle or branch at the base. In the genus *rucervus* (Hodgson), the horns are cylindrical, repeatedly forked at the tip; the tail short and thick, a well developed tear bag, broad rounded ears covered with hair, and narrow compressed hoofs; the fur is soft, with indistinct spots, and without pale tint on the rump; the face is long and narrow, the opening of the nose large, and the suborbital pit shallow. The species is the bahraiya deer (*R. Duvaucellii*, Cuv.), of a yellowish brown color on the tips of the black hairs; an indistinct dark streak on the back, with a row of white spots on each side; hair of neck, throat, chest, and belly longer, with scattered grayish hairs; muzzle and front of leg dark; chin white; fur in winter dark brown. In the genus *rusa* (H. Smith) the horns are on a moderately long peduncle, and simply forked at the tip, with an anterior frontal snag close to the crown; the hair is hard, rigid, and thick, elongated in the males of the larger species into a kind of mane on the neck; they have canine teeth. The black samboo deer (*R. Aristotelis*, Cuv.) is of a blackish brown color, with the feet, vent, and spot over the eye fulvous; tail brown, with dark tip; the skull is about 17 in. long, with a very deep triangular suborbital pit: a large and beautiful animal, inhabiting India and Ceylon. The Malayan samboo (*R. equinus*, Cuv.) is plain brown, with a rounded, floccose, black-tipped tail; this inhabits Sumatra and Borneo, and is the eland or elk of the Dutch sportsmen. The Javan rusa (*R. hippelaphus*, Cuv.) is remarkable for its ample mane, giving it a resemblance to a horse, whence its specific name; its color is dull brown, and the hair thick, dry, and frizzled; it stands more than 3 ft. high at the shoulders; it inhabits Java. The smaller rusas have no manes, and the elongated peduncles of the horns are covered with hair. The genus *axis* (H. Smith) is characterized by horns similar to those of *rusa*, but more slender, by the absence of canines and mane, by

an elongated tail, and by the smaller size; the hair is thick, polished, fulvous, with beautiful white spots at all seasons; the face is long and narrow, the ears large and acute, the legs long



Spotted Axis (A. maculata).

and slender; the suborbital pit is small but deep. The spotted axis (*A. maculata*, Gray) has a black streak on the back edged with a series of white spots; on the sides is an oblique curved line of similar spots, and a short oblique white streak across the haunches; in size and markings it resembles the fallow deer, but its horns are quite different, being destitute of palmations. This species is abundant in Bengal, and is frequently hunted; it frequents thick jungles near water, feeds during the night, and is very timorous except in the breeding season; it is easily tamed, and in captivity is very nice in tasting its food; the height is about 2½ ft. at the shoulders. The genus *hyelaphus* (Sundev.), which includes the hog deer, resembles *axis*, but is lower on the legs, and has no black dorsal streak, nor white streak on the haunches; the ears are short and round. The porcine deer (*H. porcinus*, Zimmerm.) is of a yellowish brown color, with obscure whitish spots, the front of face and legs darker, and white on the inside of the thighs; it inhabits the jungles of India, and, notwithstanding its thick and clumsy appearance, is a very active animal; the tail is bushy, and often carried erect. The genus *cervulus* (De Blainv.), the last of the rusine division, inhabiting eastern Asia, will be described in the article Muntjac.—Of the capreoline deer, the genus *capreolus* (H. Smith), containing the European roebuck and the Siberian ahu, will be described in the article Roebuck. The genus *furcifer* (Wagn. and Sundev.) has the horns erect, forked, without any basal snag, acute narrow ears, and a short tail; the hair is thick, brittle, and waved; there is a distinct pencil of hairs on the inside of the hock, but none on the outer side of the metatarsus (in which it differs from *capreolus*). The taruga (*F. Antisiensis*, D'Orbigny) is of a yellowish gray color, with the edge of the muffle and throat white; face with a brown streak, and a band between the eyes; hoofs broad; it inhabits the mountains of Bolivia, and the east coast of South America. The gemul (*F. huamel*, H. Smith) is darker colored, with the inside of the ears white; this species, considerably larger than the roebuck, inhabits the mountains of eastern South America and Patagonia. The genus *blastocerus* (Wagn. and Sundev.) has horns straight, erect, three-branched, without basal snag; a very short tail and large ears; hair very thin and soft, the tuft on legs as in *furcifer*. The guazupuco deer (*B. paludosus*, Desm.) is nearly as large as the stag; the general color is fulvous, but the inside of the ears and limbs and the lower parts of the breast are white; the face marks and feet are blackish, and the under surface of the tail white; it inhabits Brazil and Paraguay. The guazuti deer (*B. campestris*, Licht.) is much smaller than the last, standing about 2½ ft. high at the shoulders; the horns are more slender, and about a foot long, gen-



Guazupuco Deer (Blastocerus paludosus).

erally with two snags; the color is fulvous brown; the hairs of the nape and back reversed; the hoofs are narrow. This beautiful animal inhabits the open plains of Patagonia, and is so swift of foot that, according to Azara, a horse cannot overtake it; the flesh of the young is delicate, but that of the adult strongly flavored.—The genus *cariacus* (Gray), which contains our common deer, has the horns cylindrical, tending to flatten, strongly bent back and then forward, with a central internal snag, the tip bent forward, and several lower branches on the hinder edge; the hair is soft and thin, and the moderately long tail has long hair on the under side; the ears are large and rounded; there is generally a tuft of white hair on the hind leg, rather below the middle of the metatarsus; the suborbital pit in the skull is shallow, and the nasal bones broad and subtriangular behind; the hoofs are generally narrow and elongated. The common American deer (*C. Virginianus*, Penn.) has rather a long head and sharp muzzle, large and lustrous eyes, and the lachrymal bags covered by

a fold of the skin; the legs are long and slender. The color in summer is bright fulvous, in autumn of a leaden hue, and in winter dark brown, when it is longer haired above; the



American Deer (Cariacus Virginianus).

lower parts from chin to end of tail are white; the sexes are very much alike. The young, till about the age of four months, are bright reddish brown, with irregular longitudinal white spots; after this age they resemble the old ones. The length of this species from nose to root of tail is about 5 ft. 4 in., and the length of tail, including the hair, 13 in., the bones being only 6 in.; the ear is 5½ in. high. From the observations of Dr. Bachman, as given in the "Quadrupeds of North America" (vol. iii., p. 168), it appears that in the one-year-old male the horns had each a rudimentary prong about five eighths of an inch long, and another scarcely visible; when two years old, two prongs, from 4 to 6 in. long; when three years old, three prongs, the longest 8 in. with brow antlers; when four years old, the brow antlers longer and curved, and larger in diameter; during the next two years the animal seemed to lose its vigor, and the horns diminished in size; perhaps in the wild state the horns would have been somewhat larger. As a general rule, the horns become annually longer and more branched, until the animal arrives at maturity, when they begin to decline; when the operation of castration is performed while the horns are fully grown, they are said to continue for years, and after they have dropped there is no subsequent growth. This graceful animal is the most useful of the wild game of North America; its flesh forms a palatable and easily digestible article of food; its skin is made into various articles of clothing both for civilized man and the savage; its horns are useful for handles of different kinds of cutlery; its sinews for the bow-strings and snow-shoe netting of the North American Indian. Though very timid, it lingers around its old haunts when invaded by man and persecuted by the hunter; during the day it retires to thickets and swamps, coming out to feed and drink by night; in hot weather it is fond of immersing itself deeply in ponds and streams. The food of the deer in winter consists of buds of the wild rose, hawthorn, brambles, and various berries and leaves, and in spring and summer of the tenderest grasses; it not unfrequently visits the fields of wheat, oats, maize, and cow peas; berries, nuts, acorns, and persimmons are also favorite articles of food. They are in fine order from August to November, when in the southern states the rutting season begins; during this period, which lasts about two months, the neck of the male increases in size; when the males meet, tremendous battles ensue, resulting often in the death of one or both of the combatants; about January the horns are dropped, and they associate peaceably, as if conscious of their weak and defenceless condition. In about three weeks after the shedding of the horns, the swellings of the new ones begin to appear, soft, tender, vascular, growing rapidly, accompanied by considerable heat, and covered by a soft downy skin called the velvet; when these are fully grown, in July or August, this dry covering is rubbed off against the trees, and the horns become solid and smooth. The females are fattest from November to January, gradually getting thinner toward the end of gestation, and growing quite lean while suckling the young. The young are born in April, May, or June, according to latitude; Audubon says that in Florida and Alabama most of the fawns are brought forth in November. The young are carefully concealed, and are visited by day only occasionally, as at morning, noon, and night; they are easily domesticated, but are troublesome pets. The hind does not produce young until she is two years old, and the number of fawns varies from one to three at a birth; she is much attached to her young, and the imitation of their cry is often practised by the Indians to bring the mother within reach of their weapons. Deer are gregarious, being found in herds of several hundreds, the sexes separate except during the rutting season; their smell and hearing are very acute, as every hunter knows; the sight is not so acute, and the voice is quite imperfect. Preferring to roam at night in search of food, they frequent the banks of watercourses and the salt licks, where great numbers are destroyed. In walking, the deer carries the head low, the largest animal usually leading the herd, which advances in single file; when alarmed, it gives two or three high and exceedingly graceful springs, and if it sees any danger rushes off with the speed of a race horse, running low, with the head in a line with the body. Deer take to water readily, and swim with their bodies deeply submerged, and so rapidly that nothing but an Indian canoe can easily overtake them. The deer has been hunted by the

Indians for ages with the bow and arrow; the white man hunts it with the rifle in the rocky districts, chases it with hounds in the open country of the south, or kills it when dazzled at night by a bright light in the woods. The deer are growing scarce in all but the unsettled parts and inaccessible swamps and thickets of the United States, and will soon become extinct unless stringent laws are made and enforced against killing them out of season; they are found, however, in every state of the Union, in Canada and the British provinces, in Texas and in Mexico; in California this is replaced by the black-tailed species. Those found in the mountains are larger and shorter-legged than those of the swamps of Carolina and the Atlantic seaboard. It is generally believed that the *C. Mexicanus* (Licht.), *C. nemoralis* (H. Smith), and *C. gymnotis* (Wiegm.), all from Mexico, are only



Californian or Black-tailed Deer.

varieties of the common Virginian deer. A different species, however, is the black-tailed or Californian deer (*C. Richardsonii*, Aud. and Bach.; *C. Columbianus*, Rich.). The male is a little larger than the common deer, but shorter and stouter in form; the horns are twice forked, the first fork being 10 in. from the base, the antlers somewhat like those of the European stag; the ears are of moderate size, the head shorter and the nose broader than in the first species; the hoofs are narrow and pointed; the lachrymal openings large, and close under the eye; the tail short and bushy. The general color is reddish brown above and white beneath, with no light patch on the buttocks; the chest blackish brown, which encircles the shoulder like a collar; a dark line from under chest to middle of belly; the tail dark brown, becoming black at the top, and white below. The length to root of tail is $5\frac{1}{8}$ ft., tail 9 in.; height at shoulders $2\frac{1}{2}$ ft.; width of horns between superior prongs $1\frac{2}{3}$ ft. First noticed by Lewis and Clarke near the Columbia river, it has become recently well known to the Californian miners; it seems to replace the common deer to the west of the Rocky mountains. The flesh is tender and of good flavor. Less graceful than the common deer, and more bounding in its movements, it is said to be very swift; it also breeds earlier in the season. It is found from California to the Russian possessions. The Columbian black-tailed deer (*C. Lewisii*, Peale) may be merely a variety, according to season or locality, of the last named. The long-tailed deer (*C. leucurus*, Douglass) is smaller than the Virginian, with the head and back fawn-colored, mixed with black; sides and cheeks paler; white beneath; tail brownish yellow above, reddish near tip, and cream-white below. The form is elegant, lachrymal opening small, limbs slender, hoofs sharp-pointed, and tail long; the fur dense, coarse, and long, with a tuft on the belly between the thighs. The length is only 4 to 5 ft. to root of tail; tail 13 in. In appearance and manner of jumping it resembles the roebuck; the flesh is excellent. According to Richardson, this species is not found on the east side of the Rocky mountains beyond lat. 54°, nor to the eastward of lon. 105°; Douglass says that it is the most common deer in the districts adjoining the Columbia river; it is also met with on the upper Missouri and Platte rivers, and in Washington territory. The mule deer (*C. macrotis*, Say) is intermediate in size between the wapiti and the common deer, and is a noble-looking animal, the only drawback being its long ears; the horns are twice forked; the lachrymal aperture is long, the hair coarse and crimped, the hoofs short and wide, and the tail almost without hair beneath. The general color of the hair above is brownish gray, shading into fulvous, the chin without any dark markings; the forehead dark brown, and the dorsal line nearly black; below grayish white; a yellowish white spot on the buttocks; tail pale ferruginous, with



Mule Deer (Cariacus macrotis).

a black tuft at the end; the glandular openings on the sides of the hind legs are very long. In the female, the form and length of the ears resemble so much those of the mule that the ori-

gin and appropriateness of the common name are very evident. The length of a female measured by Audubon and Bachman was $4\frac{5}{6}$ ft. to the root of the tail, and the tail to end of hair 10 in.; the height at the shoulders $3\frac{1}{4}$ ft., at the rump $3\frac{1}{2}$ ft.; length of ears 7 in.; the weight 132 lbs. The male would be considerably larger than this. Their habits are more like those of the stag than of the common deer; they fly far from the settlements, and when started run a mile or two before stopping. The female brings forth one or two young in the month of June. This species ranges along the eastern sides of the Rocky mountains, from 54° N. to northwestern Texas; it is found on the upper Missouri and Platte rivers and in Oregon, not extending to the Pacific.—In the genus *coassus* (Gray; *subulo*, H. Smith), the horns are simple, straight, and round, like those of a deer of the first year, and inclining backward; the ears are short, broad, and almost naked; tail short; face rather convex; the fur short, elongated into a tuft on the forehead; legs without any external metatarsal tuft, but with a pencil of hairs on the inside of the hocks; the suborbital pit is small and shallow. This genus, which includes the brockets, is confined to tropical South America; they are of small size, living in woods and jungles. The pita brocket (*C. rufus*, F. Cuv.) is of a shining red color, with the crown and neck gray; the young are spotted with white, and the females are of a lighter red, with more gray. They inhabit the low, moist woods, and are polygamous, there being about ten females in company with one male; they are very fleet for a short distance, but are soon tired out. The height at the shoulders is about two feet. The apara brocket (*C. nemorivagus*, F. Cuv.) is about 26 inches long, and resembles a sheep more than a deer. The lower parts of the head and lips are whitish; the inside of the fore legs, and from the lower breast to the buttocks, pale cinnamon-colored; the neck and rest of the body grayish brown. The eyebrowed brocket (*C. superciliaris*, Gray) differs from the pita in the deeply arched muffle and the white stripe over the eyes. The large-eared brocket (*C. auritus*, Gray) resembles the Asiatic muntjac in color, and the ears are large, broad, more than half the length of the head, with two lines of hairs. All these species inhabit Brazil and the eastern coast. On the western coast is another species, the venada deer (*C. pudu*, Mol.), with ears thickly covered with hair, a deep suborbital pit, and large molars; the fur is rufous, blackish in front and behind; the ears and tail are very short. It inhabits Chili.

DEERFIELD, a town of Franklin co., Massachusetts, on the W. bank of the Connecticut, at its junction with Deerfield river, and on the Connecticut River railroad, 90 m. W. by N. of Boston; pop. in 1870, 3,632. It was settled in 1670, and is the seat of an academy. The principal village is situated on a plain nearly 100 ft. below the general level of the Connecticut valley. It is regularly built, and the main street is shaded with fine trees. A bridge, 750 ft. long and 90 ft. above the water, spans the Deerfield river. Deerfield mountain, rising 700 ft. above the plain, commands an extensive view. On the bank of the Connecticut, in the S. part of the town, Sugar Loaf mountain, a conical peak of red sandstone, rises to a height of 500 ft. About a mile N. W. of this is the village of Bloody Brook, or South Deerfield, the scene of an Indian massacre in 1675, when Capt. Thomas Lathrop and 76 of the 84 men under his command were slain, having fallen into an ambuscade while transporting stores to Hadley. A stone slab marks the spot where Lathrop and about 30 of his men were buried, and in 1838 a marble monument was erected in front of one of the churches. In the winter of 1704 Deerfield was attacked in the night by a party of French and Indians, and all but the church and one dwelling was burned; 36 of the inhabitants were killed, and 108, including the minister, the Rev. John Williams, and his family, were made captive. Of these, 13 were slain in the fields after leaving the town, and the rest were hurried on foot through the wilderness to Canada; some died, and some, unable to keep up, were killed on the way. Those who survived were released in the autumn of 1706; but the youngest daughter of Mr. Williams remained with the Indians, and subsequently married a chief of the tribe. In the following year Mr. Williams published "The Redeemed Captive," an interesting account of his adventures. Among other relics of the Indian wars, an old door of massive woodwork, bearing tomahawk scars and bullet holes, is still preserved. It is the sole remnant of the blockhouse which the early settlers built for protection against the savages.

DEER GRASS (*rhexia Virginica*, Linn.), the New England representative of the Asiatic



Deer Grass (Rhexia Virginica).

family of plants called *melastomaceæ*, of which only eight species are found in the United

States. The flowers, in common with those of the family, are conspicuous and showy, with bright purple petals, and the meadows are unusually gay when sprinkled with patches of this plant, entitling it to its common name of meadow beauty.

DEER LODGE, a N. W. county of Montana territory, bounded N. by British America; area, 15,300 sq. m.; pop. in 1870, 4,367, of whom 776 were Chinese. It is watered by tributaries of the Missouri and Columbia rivers. There are grazing and agricultural lands on both sides of the Rocky mountains, which intersect it from S. E. to N. W. It contains the richest mining territory of Montana, and produces more gold than any other county. The Northern Pacific railroad is to cross it. The chief productions in 1870 were 11,510 bushels of oats, 4,960 of barley, 7,200 of potatoes, 3,575 tons of hay, and 36,685 lbs. of butter. There were 952 horses, 2,252 milch cows, and 3,749 other cattle; 6 quartz-crushing mills, and 6 saw mills. Capital, Deer Lodge.

DEFEASANCE, Deed of, an instrument which defeats the force or operation of some other deed or of some estate. The event which is to defeat a conveyance or other deed may either be specified therein, in which case it is called a condition, or it may be declared by a separate defeasance; as in the case of a mortgage, where one deed may convey the land and also declare that the conveyance shall be defeated on payment of the money secured, or the conveyance may be by ordinary deed, and a separate defeasance given back by the grantee. Where the defeasance is thus separate, the rules of execution, acknowledgment, and recording are the same as with other deeds.

DEFFAND, or **Deffant, Marie** (DE VICHY-CHAMROND), marquise du, an accomplished French woman, born at the château of Chamrond in 1697, died in Paris, Sept. 24, 1780. She was of noble birth, and was educated at a convent; but at the age of 16 she adopted skeptical opinions on religious subjects. At 20 she was married to the marquis du Deffand, from whom her indiscretions soon caused her to be separated; after which she pursued a career of fashionable dissipation, and for many years was one of the most brilliant ornaments of the court of the regent and of Louis XV. Although incapable, from a natural selfishness and want of sympathy, of entertaining the passion of love, she knew how to inspire it in others; and over the greater part of her numerous lovers, among whom, it is said, was the regent himself, her influence remained unimpaired until their dotage. She was courted by the most eminent men of the time; and when, in her 55th year, she became blind, her saloons in the convent of St. Joseph were the favorite resort of Montesquieu, Voltaire, President Hénault, D'Alembert, David Hume, and many others. At this period she became acquainted with Horace Walpole, between whom and herself a correspondence was carried on for many years. Her latter years were marked by peevishness, and she died unhappy after unavailing efforts toward the life of a devotee. Her correspondence was first published in 1802. A new edition appeared in 1859, and two in 1864.

DEFIANCE, a N. W. county of Ohio, bordering on Indiana; area, 414 sq. m.; pop. in 1870, 15,719. The St. Joseph's and Maumee are the principal rivers. The surface is level, the soil good, and timber is abundant. The Miami canal and the Toledo, Wabash, and Western railroad traverse it. The chief productions in 1870 were 246,393 bushels of wheat, 146,810 of Indian corn, 128,111 of oats, 70,825 of potatoes, 17,971 tons of hay, 366,211 lbs. of butter, 72,215 of wool, and 20,600 of tobacco. There were 5,025 horses, 4,933 milch cows, 6,052 other cattle, 24,271 sheep, and 10,676 swine; 5 grist mills, 10 saw mills, 3 manufactories of furniture, 2 of wagon material, 2 of iron and castings, 1 of machinery, 1 of oars, 1 of woollen goods, 6 tanneries, and 6 currying establishments. Capital, Defiance.

DEFOE, Daniel, an English novelist and political writer, born in London in 1661, died there, April 24, 1731. He was the son of a butcher of the parish of St. Giles, Cripplegate, and was admitted by right of birth to the freedom of the city in 1688, under the name of Daniel Foe, but afterward assumed that of Defoe. He was educated in a dissenting academy at Newington Green, near London, and in 1680 was nominated a Presbyterian minister, but never followed that vocation. He published in 1682 a pamphlet entitled "Speculum Crape-Gownorum, or a Looking-Glass for the Young Academics," a lampoon on prevalent high-church notions. In 1683, when the Ottomans advanced into Austria, he issued his "Treatise against the Turks," combating the general sentiment in favor of the latter, and arguing that it was "better that the popish house of Austria should ruin the Protestants in Hungary, than that the infidel house of Ottoman should ruin both Protestants and Papists." In 1685 he enlisted, under the duke of Monmouth, in the rebellion against James II., and afterward went to London, where he became a hose factor. In 1687 he published a tract assailing the proclamation of King James for the repeal of the penal laws. He hailed the revolution of 1688 as the salvation of Protestantism, and was one of the volunteers who escorted William and Mary from Whitehall to the mansion house, Oct. 29, 1689. In 1692 he was declared bankrupt and was obliged to abscond, but compounded with his creditors, they accepting his personal bonds, which he punctually paid. Subsequently he discharged his full liabilities to such of his creditors as had themselves fallen into distress. In 1695 he was appointed accountant to the commissioners of the glass duties, in which service he continued till the suppression of the tax in 1699. He published in 1697 an "Essay on Projects," which proposed the establish-

ment of a society for making a general reformation in manners and language; and in 1701 "The True-born Englishman," a poetical satire commencing with the well known couplet:

> Wherever God erects a house of prayer,
> The devil always builds a chapel there.

It was designed to vindicate King William from the odium which had been thrown upon him in a poem entitled "The Foreigners," had an almost unexampled sale, 80,000 pirated copies being sold on the street, and obtained for the author direct personal intercourse with the king. In 1701, when the bearers of the famous Kentish petition were imprisoned by order of the house of commons, Defoe is said to have been the man who composed and presented a threatening remonstrance, signed "Legion," claiming to be sent by 200,000 Englishmen, which produced immense commotion, and for a time deterred several members from attending the house. Two other tracts speedily followed, in one of which he eloquently maintained the original rights of the collective body of the people, and in the other declared the reasons against a war with France. The latter, though adverse to the favorite policy of William, did not excite his displeasure, and he was till his death the patron and friend of Defoe. In 1702 he published "The Shortest Way with Dissenters," a satire in which he assumed the tone of a high churchman, and gravely proposed to establish the church and rid the land of dissenters by hanging their ministers and banishing their people. His satires had already mortified and offended many of the tory leaders, through whose influence his pamphlet was now voted a libel on the house of commons and was ordered to be burned by the common hangman. An order was issued offering £50 reward for his arrest, in which he is described as "a middle-sized, spare man, about 40 years old, of a brown complexion, and dark brown colored hair, but wears a wig; a hooked nose, sharp chin, gray eyes, and a large mole near his mouth." He was at this time owner of some brick and pantile works near Tilbury fort, from which he absconded; but he gave himself up when a prosecution was again begun against his publisher, and was condemned to be fined, pilloried, and imprisoned. During his two years' imprisonment in Newgate he began a semi-weekly paper, entitled "The Review," which was continued till 1713. His liberation was due to the solicitation of Harley, afterward earl of Oxford. Though occasionally employed in the service of the queen, and once upon a secret mission in a foreign country, he continued his literary labors, and published in 1705 "The Consolidator, or Memoirs of Sundry Transactions in the Moon," in which he developed a lunar language, and made the lunar politicians discuss the wars of Charles XII. of Sweden; in 1706, the satire *De Jure Divino*, in which he attacked the doctrines of passive obedience and divine right; and also several treatises relating to the union with Scotland, which he was efficient in promoting, being sent by the cabinet of Queen Anne on an important mission to Edinburgh; in 1709, a "History of the Union," which is the most authentic on the subject; and from 1711 to 1713, a series of pamphlets against the insinuations of the Jacobites and the schemes of the pretender. The most notable of these were "What if the Queen should die?" and "What if the Pretender should come?" The irony of the titles was misapprehended, and he was again fined and for four months committed to Newgate in 1713, where he finished his "Review." After the death of the queen his enemies so assailed him from every quarter, that in 1715 he published a general defence of his conduct under the title of "An Appeal to Honor and Justice." He had not finished this when he was struck with apoplexy, and after languishing for six weeks recovered. He now determined to abandon political satire, and write works for the promotion of religion and virtue. Such were his "Family Instructor" (1715) and "Religious Courtship" (1722). In 1719 appeared "The Life and strange surprising Adventures of Robinson Crusoe, of York, Mariner, who lived eight and twenty years all alone in an uninhabited island on the coast of America, near the mouth of the great river Orinoco," the most popular of all his works. The publisher, who purchased the MS. after all others had refused it, is said to have cleared £1,000 by it. He was accused by his enemies, who were numerous and bitter, of having stolen the idea and even the materials of "Robinson Crusoe" from the narrative of Alexander Selkirk; but the charge was wholly without foundation. Selkirk was not wrecked at all, but voluntarily went ashore on Juan Fernandez, which at that time was as well known and more frequented by ships than now. Crusoe's island, as the title of his narrative states, was in the northern hemisphere, in the Caribbean sea, near the mouth of the Orinoco; and the most probable prototype of Defoe's hero was Peter Serrano, who in the 16th century was shipwrecked and lived alone for several years on an island in the Caribbean sea near the mouth of the Orinoco. His story is told at full length in Garcilaso's "History of Peru," a translation of which was published in London 20 years before "Robinson Crusoe" was written, and could hardly have escaped Defoe's notice, as the book attracted great attention, and Serrano's story is in the first chapter. After "Robinson Crusoe" his best known work is "The Fortunes and Misfortunes of Moll Flanders, written from her own Memorandums" (1721), the history of a woman of the town transported to Virginia. Among his other works are "The Life and Piracies of Captain Singleton" (1720), "The Life of Colonel Jack" and "Journal of the Plague in 1665" (1722), "The Ad-

ventures of Roxana" (1724), "A New Voyage round the World, by a Course never sailed before" (1725), "The Memoirs of a Cavalier," and "The Political History of the Devil." He also wrote important economic and commercial treatises, entitled "The Complete English Tradesman," "An Essay on the Treaty of Commerce with France," "A Plan of the English Commerce," and "Giving Alms no Charity." The most prominent characteristic of his fictions is the distinctness of reality which he gives to them by the elaborate and precise statement of details; which was turned to practical account in a curious way in his "Apparition of Mrs. Veal," written to create a demand for an unsalable book. (See DRELINCOURT.) The "Memoirs of a Cavalier" and "Journal of the Plague" have been mistaken for real history. After an indefatigable and checkered life, Defoe died in the parish of his birth, insolvent, and the author of 210 books and pamphlets. He thus summed up the scenes of his career:

> No man has tasted different fortunes more;
> And thirteen times I have been rich and poor.

Though remembered chiefly as a novelist, he was during 30 years a leader in the fierce partisan strife by which, under William of Orange, constitutional liberty was realized in England, and has been pronounced "the most thorough Englishman and writer of his day, a model of integrity, and as consistent, sincere, and brave as he was gifted." The best editions of his works, though incomplete, are that of London (3 vols., 1840–'43), with a memoir by William Hazlitt, and that of Oxford (20 vols., 1840–'41), with memoirs and notes by Sir Walter Scott and others. In September, 1870, a monument was erected to his memory in the cemetery of Bunhill Fields, where he was buried. It bears this inscription: "Daniel De Foe, born 1661, died 1731; author of Robinson Crusoe." His life has been written by George Chalmers (4to, London, 1785) and Walter Wilson (3 vols. 8vo, London, 1830).

DE FOREST, John William, an American author, born in Derby, Conn., March 31, 1826. At the age of 20 he made a voyage to the Levant, where he remained nearly two years, residing chiefly in Syria. On his return he compiled a "History of the Indians of Connecticut" (Hartford, 1850). In 1850 he went to Europe, where he remained four years, travelling in England, France, Italy, and Germany. Returning to America, he published "Oriental Acquaintance" (1857), and "European Acquaintance" (1858). In 1859 he produced "Seacliff," his first novel, and from that time to the breaking out of the civil war wrote short stories for periodicals. In 1861 he recruited a company for the 12th Connecticut volunteers, was made captain, and served in the field till January, 1865, participating in the campaigns in the southwestern states under Weitzel and Banks, and in the Shenandoah valley under Sheridan. From 1865 to 1868 he held various official positions in the bureau of the veteran reserve corps and the freedmen's bureau. Besides essays, stories, and poems, he has published the following novels, all of them first as serials: "Miss Ravenel's Conversion from Secession to Loyalty" (New York, 1867); "Overland" (1871); "Kate Beaumont" (1872); and "The Wetherel Affair" (1873).

DEFREGGER, Franz. See supplement.

DEGER, Ernst, a German painter, born at Bockenem, Hanover, April 15, 1809. He studied at Berlin and afterward at Düsseldorf, under Wilhelm von Schadow. His first efforts were oil pictures, among which are some altar-pieces of merit, especially a madonna and child in the church of St. Andrew at Düsseldorf. In 1851 he completed the fresco painting for the church of St. Apollinaris, near Remagen, on the Rhine, and was engaged by Frederick William IV. of Prussia, to paint the chapel of the castle of Stolzenfels. In 1857 he sent for exhibition at the *salon* of Paris a picture of the infant Jesus, and in 1859 one of the Virgin Mary. He is a professor and member of the academy of fine arts in Munich.

DE GERANDO. See GERANDO.

DEGREE. I. In algebra, the number expressing the greatest number of times which an unknown quantity enters a term as a factor. Thus the term x^2y^3 is of the second degree with respect to x, of the third with respect to y, but is called a term of the fifth degree. The degree of an equation is that of its highest term. Thus, $4x^3+7x^2=8$, is an equation of the third degree. **II.** In trigonometry, $\frac{1}{360}$ part of a right angle, indicated by a small circle near the top of the figure; thus, 30° signifies one third of a right angle. Each degree is divided into 60 minutes, each minute into 60 seconds; thus, 31° 12′ 15″ is read 31 degrees, 12 minutes, 15 seconds. **III.** A degree of latitude is the distance N. or S. between two places on the same meridian at which plumb lines would make an angle of one degree with each other. Owing to the flattening of the earth toward the poles, this distance increases in length as the observer goes N. or S.; being about 2,740 ft. more at latitude 60° than at the equator. The length of the degree midway between the equator and the poles is about $69\frac{1}{10}$ statute miles. Many careful measurements of a degree have been made by various European governments, not only in their own territories, but in South America, India, and Africa. The most northern accurate measurement was in Lapland, the most southern at the Cape of Good Hope; and measurements have also been taken both in India and South America, almost exactly upon the equator. The longest arcs measured are those in France by Mechain and Delambre, and that in India by Col. Lambton; the first being over 12°, the second nearly 16°. From a complete discussion of all the observations, Bessel deduces the following results: the diameter of the earth at the equator is 41.847.

192 English feet; the diameter through the poles 41,707,314 English feet; so that the difference of the diameters, divided by the longest diameter, gives us almost exactly the quotient of 1 divided by 300 ($\frac{1}{300}$). These results of Bessel may be compared with those of other astronomers, for which see EARTH. They all agree very nearly with each other and with the celestial phenomena that depend upon the ellipticity of the earth. It is remarkable that this, the only way of determining the size of the earth, was invented and put in practice by Eratosthenes, in Egypt, in the 3d century B. C. **IV.** A degree of longitude is the distance between two places of the same latitude, the difference of whose clocks is exactly four minutes; in other words, the planes of whose meridians make an angle of 1° with each other. The length of a degree of longitude is at the equator 69·16 statute miles; at latitude 20° it is about 65·015 miles; at latitude 30° it is reduced to 59·944, at 40° to 53·053, and at 50° to 44·342.

DE HAAS, W. F., and **M. F. H.** See supplement.

DEHN, Siegfried Wilhelm, a German musician, born in Altona, Feb. 24, 1799, died in Berlin, April 12, 1858. He was distinguished for his great knowledge of musical literature and for his attainments as a contrapuntist. He studied at Leipsic, Jena, and Heidelberg, and in 1824, having become proficient on the violoncello, he studied thorough bass under Klein. After he became a teacher he had many distinguished pupils, among them Glinka, Haupt, Ulrich, and Kullak. In 1842, by the advice of Meyerbeer, he was appointed librarian of the musical department of the royal library. In the same year he became editor of the *Cäcilia*, and in 1845 was appointed director of the famous Dom choir. He also edited the Peters edition of Bach's instrumental works, and prepared a biography of Orlando di Lasso.

DEIOCES. See MEDIA.

DÉJAZET, Pauline Virginie, a French actress, born in Paris, Aug. 30, 1798, died there, Dec. 1, 1875. She began her career at the age of five, in the théâtre des Capucines, and continued on the stage in Paris and the provinces till 1868. In March, 1869, the emperor Napoleon granted her a pension of 2,000 francs. She excelled in the personification of soubrettes and in male attire; and won perhaps her most brilliant laurels in *Les premières armes de Richelieu* and in *Bonaparte à Brienne.* What added powerfully to the interest which she created was her manner of singing the songs interspersed in the plays.

DEJEAN, Pierre François Marie Auguste, count, a French general and entomologist, born at Amiens, Aug. 10, 1780, died in 1845. He served in the wars in Spain, became general of division in 1813, and distinguished himself at Waterloo, where he acted as aide-de-camp of the emperor. He was one of the most celebrated collectors of *coleoptera* in modern times. He published a catalogue of his collection (3d ed., Paris, 1837–'8), exhibiting the number of species in each genus, and indicating their localities. He is the author of *Histoire générale des coléoptères* (7 vols., 1825–'39), and wrote, in concert with Boisduval and Aubé, *Iconographie et histoire naturelle des coléoptères d'Europe* (5 vols. 8vo, with 264 colored plates, 1829–'40).

DE KALB, the name of six counties in the United States. **I.** A N. W. county of Georgia, bounded N. by Chattahoochee river; area, 291 sq. m.; pop. in 1870, 10,014, of whom 2,662 were colored. It has an elevated and somewhat uneven surface. Stone mountain, in the E. part, is one of the greatest natural curiosities in the state. The soil of the river bottoms is remarkably rich. Iron is found, granite is abundant, and gold has been discovered in small quantities. At Decatur are chalybeate springs. The Atlanta and Richmond air-line and the Georgia railroads traverse it. The chief productions in 1870 were 27,685 bushels of wheat, 156,125 of Indian corn, 14,922 of oats, 10,928 of sweet potatoes, and 1,709 bales of cotton. There were 753 horses, 1,466 milch cows, 2,075 other cattle, 6,702 swine; 2 manufactories of furniture, 1 of paper, 1 of marble and stone work, and 7 saw mills. Capital, Decatur. **II.** A N. E. county of Alabama, bordering on Georgia, drained by Willis creek, an affluent of Coosa river, and Town creek, of the Tennessee; area, about 720 sq. m.; pop. in 1870, 7,126, of whom 470 were colored. A small portion has been recently attached to Etowah county. The valley of Willis creek, about 60 m. long by 5 m. broad, enclosed by Lookout mountain on the S. E. and Sand mountain on the N. W., is fertile and well cultivated. The county is well supplied with water power, and abounds with magnificent scenery. The Alabama and Chattanooga railroad passes through it. The chief productions in 1870 were 36,888 bushels of wheat, 209,994 of Indian corn, 20,488 of sweet potatoes, and 205 bales of cotton. There were 1,363 horses, 2,389 milch cows, 4,681 other cattle, 6,627 sheep, and 13,094 swine. Capital, Lebanon. **III.** A N. central county of Tennessee; area, about 300 sq. m.; pop. in 1870, 11,425, of whom 1,104 were colored. It is watered by a number of streams, and has a diversified surface and a good soil. The chief productions in 1870 were 81,412 bushels of wheat, 486,823 of Indian corn, 32,259 of oats, 124,789 lbs. of butter, 20,480 of wool, and 87,076 of tobacco. There were 2,737 horses, 2,002 milch cows, 3,347 other cattle, 11,473 sheep, and 20,999 swine. There were 3 flour mills. Capital, Smithville. **IV.** A N. E. county of Indiana, bordering on Ohio, drained by the St. Joseph's and some smaller rivers; area, 346 sq. m.; pop. in 1870, 17,167. The surface is undulating, and the soil fertile. The Grand Rapids and Indiana railroad touches the S. W. corner, and the Lake Shore and Michigan Southern, and the Fort Wayne, Jackson, and Saginaw railroads

traverse it. The chief productions in 1870 were 348,940 bushels of wheat, 219,566 of Indian corn, 198,945 of oats, 77,899 of potatoes, 20,440 tons of hay, 444,407 lbs. of butter, and 117,802 of wool. There were 5,839 horses, 5,587 milch cows, 6,820 other cattle, 34,984 sheep, and 5,856 swine; 9 manufactories of carriages and wagons, 2 of barrels and casks, 5 of saddlery and harness, 1 flour mill, and 21 saw mills. Capital, Auburn. **V.** A N. county of Illinois; area, 648 sq. m.; pop. in 1870, 23,265. It has a rolling surface and a fertile soil. Most of the land is occupied by prairies, but there are tracts of valuable timber. It is watered by several streams. The Chicago and Northwestern railroad crosses it, and the Chicago, Burlington, and Quincy line intersects the S. E. corner. The chief productions in 1870 were 398,249 bushels of wheat, 1,023,849 of Indian corn, 1,087,074 of oats, 289,447 of barley, 199,478 of potatoes, 68,665 tons of hay, 199,532 lbs. of cheese, 915,804 of butter, 104,974 of wool, and 304,342 of flax. There were 13,044 horses, 14, 619 milch cows, 18,582 other cattle, 24,993 sheep, and 26,795 swine; 4 flour mills, 3 manufactories of agricultural implements, 1 of brooms, 13 of carriages and wagons, 6 of cheese, 1 of dressed flax, and 8 of saddlery and harness. Capital, Sycamore. **VI.** A N. W. county of Missouri, drained by several small streams which flow into Grand and Platte rivers; area, 441 sq. m.; pop. in 1870, 9,858, of whom 122 were colored. The surface is occupied partly by prairies and partly by woodlands. The soil is very fertile. The Hannibal and St. Joseph railroad skirts the S. border. The chief productions in 1870 were 46,646 bushels of wheat, 521,955 of Indian corn, 125,923 of oats, 44,184 of potatoes, 6,229 tons of hay, 140,795 lbs. of butter, and 26,805 of wool. There were 4,894 horses, 3,665 milch cows, 6,171 other cattle, 11,608 sheep, and 15,813 swine. Capital, Maysville.

DE KALB, John, baron, a general in the American army of the revolution, born in Alsace, June 29, 1721, died near Camden, S. C., Aug. 19, 1780. He was trained in the French army, and in 1768 visited the Anglo-American colonies as a secret agent of the French government. He was a brigadier in the French service when, on Nov. 7, 1776, he made with Franklin and Silas Deane an engagement to serve in the forces of the revolted colonies; and in 1777 he accompanied Lafayette to America. Congress appointed him a major general, Sept. 15, 1777, after which he joined the main army under Washington, and was active in the events near Philadelphia which preceded the encampment at Valley Forge. He served in New Jersey and Maryland till, in April, 1780, he was sent to reënforce Gen. Lincoln, then besieged in Charleston, but arrived too late. He was second in command under Gen. Gates; and in the disastrous battle of Camden, Aug. 16, 1780, he was at the head of the Maryland and Delaware troops, who maintained their ground till Cornwallis concentrated his whole force upon them. He fell, pierced with 11 wounds, in the charge upon his regiments before they gave way. He died at Camden three days afterward, and a monument was erected there to his memory in 1825.

DEKKER. See Decker.

DE LA BECHE, Sir **Henry Thomas,** an English geologist, born near London in 1796, died in London, April 13, 1855. He was the only son of Col. Thomas de la Beche of Jamaica, and was educated for the army, which he entered in 1814, but soon afterward retired, and in 1818 married and settled in Dorsetshire. In 1817 he became a fellow of the geological society, of which he was subsequently elected secretary, and in 1847 president. During these and some succeeding years he investigated the geology of the counties of Devon, Dorset, and Pembroke; wrote "Observations on the Temperature and Depth of the Lake of Geneva;" and subsequently, in conjunction with the Rev. W. D. Conybeare, published an account of the plesiosaurus, under the title of "Discovery of a new Fossil Animal forming a Link between the Ichthyosaurus and Crocodile." In 1824 he visited his patrimonial estate in Jamaica, attempted to ameliorate the condition of his slaves, and wrote a paper on the geology of the island. Returning to England, he published in 1831 a "Geological Manual," in 1834 "Researches in Theoretical Geology," in 1835 "How to observe Geology," and in 1851 "The Geological Observer." He was appointed director general of the geological survey of the United Kingdom, ordered by the government about 1835; and when, in 1845, mainly by his exertions, a geological museum with free lectures was added thereto, he was nominated director of the museum of practical geology. He was a member of various scientific commissions appointed by the government. Toward the close of his life he was knighted.

DELACROIX, Ferdinand Victor Eugène, a French painter, born at Charenton, April 26, 1799, died at Champrosay, near Versailles, Aug. 13, 1863. He first became known by some able criticisms on art. He studied painting under Pierre Guérin, but from the very commencement of his career abandoned the classic school, and may be considered the founder of the romantic. His first picture, "Dante and Virgil," was exhibited in 1822. His second work, "The Massacre of Scio," is one of the most striking pictures of the French school of the 19th century. In 1831 he was sent by the government on a mission to Morocco, and while there he sketched a great variety of views and costumes, which were afterward reproduced in some very interesting and original pictures. He decorated one of the halls of the Palais Bourbon and some interior parts of the Louvre and the Luxembourg. In 1857 he was admitted to the institute. Among his works are "Mephistopheles appearing to Faust," "The Prisoner of Chillon," "Women of Algiers," and "The

Lion Hunt." His productions are distinguished by their life and energy, but his coloring is more powerful than harmonious. M. Thiers, then literary and artistic editor of the *Constitutionnel*, was the first to call attention to Delacroix's picture, "The Death of Sardanapalus." This painting, which in 1845 was sold for 6,000 francs, brought 96,000 in 1873.

DELAGOA BAY, the largest bay on the S. E. coast of Africa, in lat. 26° S., and lon. 33° E. It is formed by the Indian ocean, and stretches N. and S. about 50 m., with a breadth of from 16 to 20 m. It is accessible and affords a good anchorage to vessels of the largest class. The land is low and marshy near the shore, but rises after a short distance inland. It is the southernmost possession of the Portuguese on the E. coast of Africa, and they have a fort near the mouth of one of the rivers flowing into it. The island of Inyack, at its southern entrance, is held by Great Britain.

DELAMBRE, Jean Baptiste Joseph, a French astronomer, born in Amiens, Sept. 19, 1749, died in Paris, Aug. 19, 1822. He was a pupil of Delille at the college in his native town, where he distinguished himself as a classical scholar. He studied rhetoric and philosophy in Paris, and on leaving college became a private tutor, occupying his leisure in reading Italian, English, and Greek literature, and studying mathematics at first only sufficiently to teach his pupils. From 1780 he devoted himself to astronomy, being first the pupil and then the collaborator of Lalande, who said that "Delambre was his best work." In 1790 he gained the prize of the academy of sciences for his tables of Uranus, though that planet had completed but a small arc of its orbit after its discovery by Herschel; and in 1792 another prize was given him for his tables of the satellites of Jupiter. For these labors he was unanimously elected a member of the academy in 1792. In the same year he was associated with Mechain in measuring an arc of the meridian from Dunkirk to Barcelona. The work was interrupted by the revolution, and was not finished till 1799. Delambre published the results in his *Base du système métrique décimal* (3 vols., 1806–'10). He entered the bureau of longitudes in 1795, the institute of France at its formation in the same year, became inspector general of studies in 1802, perpetual secretary of the institute for mathematical sciences in 1803, successor of Lalande in the collége de France in 1807, and treasurer of the imperial university in 1808. The last office was suppressed at the restoration, and from that time he pursued his researches in retirement. After having spent 30 years in the most severe astronomical and mathematical calculations, he undertook to write the history of astronomy from the remotest period, five volumes of which were published before his death (1817–'21), and a posthumous volume on astronomy in the 18th century was issued in 1827. He also made a report on the progress of the mathematical sciences since 1789 (1810), and wrote *Astronomie théorique et pratique* (3 vols., 1814), and numerous papers for the *Biographie universelle* and the transactions of different European academies of science.

DE LANCEY, William Heathcote, an American bishop, born in Westchester co., N. Y., Oct. 8, 1797, died at Geneva, N. Y., April 5, 1865. He graduated at Yale college in 1817, studied theology under Bishop Hobart, and received deacon's orders in 1819. Ordained to the priesthood in 1822, he soon after became assistant of the venerable Bishop White of Philadelphia. He was secretary of the diocesan conventions of Pennsylvania from 1823 to 1830, and of the house of bishops in the general convention of the Episcopal church of the United States from 1823 to 1829. He was chosen provost of the university of Pennsylvania in 1828, which office he held five years, and then became assistant minister of St. Peter's church, one of the three churches of which Bishop White was rector. He travelled in Europe in 1835, and on his return, after the death of Bishop White, succeeded to the rectorship of St. Peter's. In 1838 he was chosen bishop of the diocese of Western New York, then just formed, and was consecrated May 9, 1839. He removed to Geneva, the seat of the diocesan college, now called Hobart college, which was chiefly indebted to his efforts for its support. In 1852 he visited England as a delegate from the Episcopal bishops of the United States, and received the degree of D. C. L. from the university of Oxford; in 1858 he again visited England.

DELANE. I. William Augustus Frederick, an English journalist, born about 1793, died in Norwich, July 29, 1857. He is memorable for his long and successful connection, as financial manager, with the "London Times," which earned its sobriquet of the "Thunderer" during his administration of its affairs, from the character of the political articles contributed by Edward Sterling. Certain financial transactions in which he was engaged rendered it advisable about 1840 that he should discontinue his connection with the "Times." For a short time he had charge of the London "Daily News," but afterward he abandoned journalism, and became treasurer of the Kent county courts. **II. John Thaddeus,** son of the preceding, born in London in October, 1817. He took his degree as bachelor at Magdalen hall, Oxford, in 1839, and as master of arts in 1846. He completed his terms as a barrister, but never practised. In 1839 he became assistant editor of the "Times," and in 1841, after the death of Mr. R. Barnes, became editor-in-chief. The exposures made by the "Times" and its correspondents, during the Crimean war in 1854, of military mismanagement on the part of the English government, made him conspicuous. In 1856 he visited the United States.

DE LA RAMÉ, Louisa (Ouida), an English novelist, of French extraction on the father's side, born at Bury St. Edmund's about 1840. At an early age she went with her mother and

maternal grandmother to reside in London, and soon began, under the pseudonyme of Ouida (a child's mispronunciation of Louisa), to write for periodicals, and while still under age commenced her first novel in "Colburn's New Monthly Magazine." This was "Granville de Vigne, a Tale of the Day," published separately two years later (1863), under the title of "Held in Bondage." It was followed by "Strathmore, a Romance" (1865); "Chandos" (1866); "Cecil Castlemaine's Gage, and other Novelettes," and "Idalia" (1867); "Tricotrin, a Story of a Waif and Stray," and "Under Two Flags" (1868); "Puck: his Vicissitudes, Adventures, &c." (1869); "Folle Farine" (1871); "A Dog of Flanders" and "A Leaf in the Storm" (1872); and "Pascarel" (1873). The last is the best of her novels, and is free from the objectionable characteristics which mark the others, and have justly given them a bad reputation in spite of their brilliancy of style.

DELAROCHE, Paul (originally a familiar abbreviation of HIPPOLYTE, his real name), a French historical painter, born in Paris, July 17, 1797, died there, Nov. 4, 1856. He at first studied landscape, but after several fruitless attempts to secure the academy prize renounced that branch of the art, and in 1816 entered the studio of Baron Gros, where his talents as a historical painter were rapidly developed. He chose a middle course between the classic and the romantic schools, striving for a style which should represent all the improvements in art and its general progress during the 19th century. Hence he and his school have been called "Eclectics." His first picture, "Naphtali in the Desert," was exhibited in 1819, and from that time until the great industrial exhibition in Paris in 1855, when a collection was made of his chief productions, almost every year witnessed the execution by his pencil of one or more striking works. His subjects were generally taken from English or French modern history. His "Children of Edward IV. in the Tower," "Joan of Arc in Prison," "Execution of Lady Jane Grey," "Charles I. in the Guardroom insulted by the Parliamentary Soldiers," "Strafford on his way to the Scaffold," "Young Pretender succored by Flora McDonald," and "Marie Antoinette before the Revolutionary Tribunal," are good specimens of the subdued yet impressive manner in which he was accustomed to handle this class of subjects. Still more powerful was his "Cromwell contemplating the Corpse of Charles I.," generally considered the best of his series illustrating the civil wars in England, and indeed of all his pictures on English subjects. Among his pictures from French history are a "Scene in the Massacre of St. Bartholomew;" the "Death of Cardinal Mazarin;" the "Assassination of the Duke of Guise," a work of great power, for which the duke of Orleans is said to have paid 52,000 francs; a series of four pictures, representing the "Baptism of Clovis," the "Oath of Pepin the Short," the "Passage of the Alps by Charlemagne," and the "Coronation of Charlemagne at Rome," painted for the gallery of Versailles; the "Destruction of the Bastile," and the "Girondists in Prison." His "Napoleon at Fontainebleau" and "Napoleon at Mount St. Bernard," of both of which he made several copies, have obtained great popularity. The work which occupied the greatest share of his attention, and upon which he intended that his reputation should rest, is his fresco of the hemicycle in the school of fine arts, a composition of great size and merit, representing the illustrious masters of art of all ages. This picture includes 74 life-size figures, and is admirable for its elevated tone, simplicity of arrangement, and fulness and force of expression. It cost Delaroche four years of incessant labor, and has been beautifully engraved by Henriquel Dupont. In the winter of 1855 the picture was much injured by fire, and the anxiety and labor attendant upon the work of restoration are supposed to have hastened his death. At various times, but particularly in the latter part of his life, he painted sacred compositions, which are inferior generally in elevation and character to his historical subjects. "Herodias with the Head of John the Baptist" is among the best. Some of his purely domestic subjects, such as "A Mother fondling her Children," are full of grace and sweetness. He painted likenesses of Guizot, Thiers, Lamartine, his own father-in-law Horace Vernet, and other distinguished Frenchmen, which show considerable talent for portraiture. But his fame rests on his historical pieces, which for elevated manner, correctness of design, and beauty of drawing and color were unsurpassed by contemporary works.

DELAUNAY, Charles Eugène, a French astronomer, born at Lusigny, in the department of Aube, April 9, 1816, drowned off Cherbourg, Aug. 5, 1872. He left the polytechnic school in 1836 with high honors as an engineer, and was the first to receive the new Laplace prize. In 1841 he became a teacher at the polytechnic school, in 1853 professor of mechanics, and in 1855 a member of the academy. In 1869 he was elected a member of the royal astronomical society of London, which awarded a medal to him in 1870. In the latter year he succeeded Leverrier in the Paris observatory; and in 1871 he was appointed professor of astronomy and geology at the polytechnic school. He published highly esteemed treatises on various scientific subjects, *Notice sur la construction de l'univers*, and *Théorie du mouvement de la lune* (2 vols. 4to, Paris, 1866–'7), which differs in its results from those obtained by Hansen and Leverrier, and which was made by the French institute the basis for a new construction of the tables of the phases of the moon.

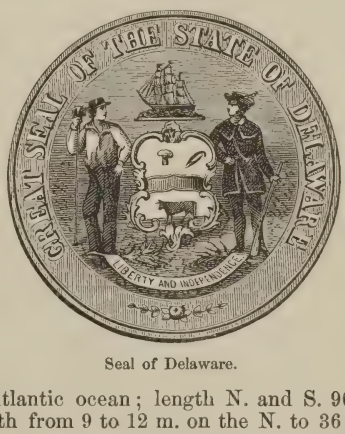
DELAVIGNE, Jean François Casimir, a French lyric and dramatic poet, born in Havre, April 4, 1793, died in Lyons, Dec. 11, 1843. He

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NEW JERSEY
MARYLAND
ATLANTIC OCEAN
DELAWARE BAY
DELAWARE R.
Pt. Delaware
Reedy I.
Bombay Hook Pt.
Old Tacks Pt.
Deep Water Pt.
Island Point
Thorn Pt.
Cape May
Lewes Cape
Delaware Breakwater & Light House
Cape Henlopen
Rehoboth Bay
Indian R. Bay
Indian R. Inlet
Indian River
Maurice R.
Chester R.
Elk River
Sassafras River
Nanticoke R.
Marsh Br.
Gum Br.
Gravelly Br.
Broad Cr.
Murderkill Cr.
St. Jones Cr.
Duck Cr.
Smyrna Cr.
Salem Cove
Ches. & Del. Can.
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KENT
SUSSEX
Wilmington
Newark
New Castle
Middletown
Odessa
Delaware City
Dover
Milford
Seaford
Laurel
Delmar
Selbyville
Lewes
Rehoboth
Milton
Harrington
Frederica
Smyrna
Clayton
Chatham
Mendenhall
Chester
Booth Corner
Avondale
Beaver Valley
Glasgow
Kaolin
Oxford
Landenberg
Hockessin
Yorklyn
Ashland
Rockland
Centreville
Greenville
Claymont
Grubb
Henry Clay
Factory
Bellevue
Edgemoor
Woodlawn
Faulkland
Marshallton
Mermaid
Thompsons Pleasant Hill
Stanton
Newport
McClellandsville
Hare's Cor.
Christiana
State Road
Cooch's Bridge
Chippewa
Red Lion
Elkton
Kirkwood
St. George's
Summit Bridge
Chesapeake City
Mt. Pleasant
Port Penn
McDonough
Odessa
Fieldsborough
Taylor's Bridge
Townsend
Deakyneville
Forest
Blackbird
Vandyke
Green Spring
Delaney's
Massey
Clayton
Brenford
Kenton
Leipsic
Down's Chapel
Moorton
Bayview
Pearson's Corner
Hartly
Merrickton
Hazlettville
Wyoming
Camden
Lebanon
Rising Sun
Hayden
Willow Grove
Woodside
Magnolia
Bowers
Petersburgh
Sandtown
Viola
Canterbury
Goldsborough
Felton
Greensborough
Hollandville
Hillsborough
Harrington
Houston Sta.
Vernon
Denton
Farmington
Adamsville
Greenwood
Ellendale
Lincoln
Robbins
Drawbridge
Lewes
Nassau
Cool Spring
Redden
Harbeson
Midway
Bridgeville
Rehoboth
Federalsburg
Cannon
Georgetown
Rodney
Hollyville
Angola
Middleford
Oak Grove
Seaford
Concord
Stockley
Shortly
Millsborough
Woodland
Bethel
Laurel
Linkwood
Mission
Dagsborough
Ocean View
Wapleysville
Blackwater
Lowe's Cross Roads
Frankford
Roxanna
Williamsville
Vienna
Whitesville
Gumborough
Selbyville
Twilley
Bishopville
Penusville
Sharpstown
Unionville
Williamstown
Newfield
Landisville
Cohansey
Bridgeton
Greenwich
Port Elizabeth
Newport
East Creek
Green Cr.
Longitude 75°30′ West from Greenwich 75°

was the son of a merchant, and at first a laborious rather than brilliant student at the Napoleon lyceum in Paris. His brother Germain, likewise a writer of plays, and his lifelong friend Eugène Scribe, then his fellow students, were his most intimate associates. In 1811 he produced a dithyramb on the birth of the king of Rome, which obtained for him the encouragement of Andrieux and the patronage of Français de Nantes, a high officer of state. In 1814 he competed for the prize offered by the academy with his *Charles XII. à Narva*, which, though unsuccessful, received honorable mention. He published in 1818 his three elegies, *Les Messéniennes*, so called in allusion to the songs of the conquered Messenians. In these he lamented the misfortunes of France resulting from the wars of Napoleon, and urged his countrymen to union and patriotism. They were very popular, and accorded so nearly with the national spirit without exciting partisan passion, that Louis XVIII. bestowed a sinecure librarianship upon the author. He wrote two elegies on the life and death of Joan of Arc, and then produced his first tragedy, *Les vêpres siciliennes*, which was performed at the Odeon in 1819, and was received with enthusiasm. It was soon followed by *Les comédiens*, written to ridicule the company of the théâtre Français by which his first drama had been rejected, and in 1821 by *Le Paria*, in which he pleads the principle of the natural equality of men. His liberal ideas, repeated in several new lyrics, to which also he gave the name of *Messéniennes*, and his association with leaders of the opposition, lost him his place under the government, when the duke of Orleans, the future king Louis Philippe, made him librarian of the Palais Royal. He produced in 1823 his *École des vieillards*, a play which gained him in 1825 admission to the French academy. Refusing a pension now offered him by the government, which he believed hostile to public liberty, he resided a year in Italy, and returned to find that the public taste was changing from the classical to the romantic drama. Delavigne conceived the idea of conciliating the two schools, of uniting classical elegance and purity with romantic boldness, and joined the romanticists, with the purpose of proving to them that pity, terror, and overpowering interest were not incompatible with sobriety of action and correctness of language. His *Marino Faliero* (1829), in the new form, obtained great success. He had begun the tragedy of *Louis XI.* in Italy, but had abandoned it on the death of Talma, as he despaired of finding any other actor qualified to perform the principal part, till he witnessed the powers of Ligier in the part of Faliero. He now set himself to finish it, and was only briefly interrupted by the revolution of 1830, during which he improvised *La Parisienne*, the most popular song at the time of the insurrection, and wrote also a new *Messénienne* entitled *Une semaine à Paris*. Declining any personal profit from the triumph of the liberal cause, he resumed his labors, and completed *Louis XI.*, which was produced in 1832; it is the greatest work of Delavigne in his second style, and has remained one of the most remarkable dramas on the stage. It was followed by *Les enfants d'Édouard* (1833); *Don Juan d'Autriche*, in prose, and one of his best pieces (1835); *Une famille au temps de Luther* (1836); *La popularité* (1838); *La fille du Cid*, in which he returned to his early manner (1839); and *Le conseiller rapporteur* (1841). While at work on another tragedy, *Mélusine*, he was taken sick, and died on a journey to Italy. His plays are distinguished as much for their purity of sentiment as their perfection of art; and notwithstanding the concessions which he made to the reigning school, he may justly be called a great classical dramatist. His works, with a memoir by his brother, appeared in 1845, in 6 vols., and a new edition of his plays in 1863, in 3 vols.

DELAWARE, one of the original thirteen states of the American Union, situated between lat. 38° 28′ and 39° 50′ N., and lon. 75° and 75° 46′ W., bounded N. by Pennsylvania, W. and S. by Maryland, and E. by Delaware river and bay (separating Delaware and New Jersey) and



Seal of Delaware.

the Atlantic ocean; length N. and S. 96 m.; breadth from 9 to 12 m. on the N. to 36 or 37 m. on the S. line; area, 2,120 sq. m., or 1,356,800 acres. The state is divided into three counties, viz.: New Castle in the north, Kent in the middle, and Sussex in the south; and these are subdivided into hundreds. Wilmington (pop. in 1870, 30,841), the only city, near the confluence of Brandywine and Christiana creeks, is extensively engaged in manufacturing. Dover (pop. 1,906), the capital, is situated on Jones's creek, 5 m. from the Delaware. Other towns in the order of population, having more than 500 inhabitants, are Smyrna, North Milford, Camden, and Frederica, in Kent co.; New Castle, Delaware City, Middletown, Newark, and Odessa, in New Castle co.; Seaford, Lewes, Laurel, Milton, South Milford, and Georgetown, in Sussex co. The population in 1790, and at subsequent decennial periods down to the year 1870, has been as follows:

CENSUS.	White.	Free colored.	Slave.	Total.
1790	46,310	3,899	8,887	59,094
1800	49,852	8,268	6,153	64,273
1810	55,361	13,136	4,177	72,674
1820	55,282	12,958	4,509	72,749
1830	57,601	15,855	3,292	76,748
1840	58,561	16,919	2,605	78,085
1850	71,169	18,073	2,290	91,532
1860	90,589	19,829	1,798	112,216
1870	102,221	22,794	....	125,015

Of the total population in 1870, 115,879 were native and 9,136 foreign born; 62,628 were males, and 62,387 females. Of the natives, 94,754 were born in the state, 8,764 in Pennsylvania, 7,146 in Maryland, 2,039 in New Jersey, and 1,311 in New York. Of the foreigners, 5,907 were born in Ireland, 1,421 in England, and 1,142 in Germany. There were 38,665 persons born in the state living in other states and territories. Of the colored, 20,570 were blacks, and 2,224 mulattoes. There were 28,207 male citizens of the United States 21 years old and over. In aggregate population Delaware ranks as the 34th among the states; gain since 1860, 11·41 per cent. There were 19,356 persons 10 years old and over unable to read, and 23,100 unable to write. Of the latter number, 20,631 were natives and 2,469 foreigners; 11,280 were white and 11,820 colored; 10,973 were males and 12,127 females; 16,002 were 21 years old and over, and 7,098 were between 10 and 21. Of those over 21 years of age, 3,466 were white males and 4,566 white females, 3,765 colored males and 4,205 colored females. There were 22,900 families and 22,577 dwellings. There were 68 blind persons, 61 deaf and dumb, 65 insane, and 69 idiotic. There were 453 paupers, of whom 180 were colored and 50 foreigners. The number of persons convicted of crime during the year was 145. Of the population 10 years old and over, 15,973 were returned as engaged in agriculture, 11,389 in professional and personal services, 3,437 in trade and transportation, and 9,514 in manufactures and mining. Included in these numbers are 8,131 agricultural laborers, 7,642 farmers and planters, 150 clergymen, 4,742 domestic servants, 4,769 laborers, 84 lawyers, 170 physicians and surgeons, 377 teachers, 845 cotton and woollen mill operatives, and 316 iron and steel workers.—Delaware comprehends the N. E. portion of the low peninsula between Chesapeake bay, Delaware river, and the Atlantic ocean. It contains no mountains, but in the north the surface is beautifully diversified by hill and dale. Southward of Christiana creek the surface is almost a perfect level, and is only relieved by a low table land or sand ridge, nowhere more than 60 or 70 ft. high, which traverses the state N. and S. near the W. boundary, and forms the watershed of the peninsula. This table land abounds in swamps, in which most of the rivers and streams have their sources, some flowing W. into Chesapeake bay, and others E. into the Delaware. The Choptank, Nanticoke, and Pokomoke, the headwaters of which are in this state, have their greatest lengths in Maryland and flow into the Chesapeake. The Appoquinnimink, Duck, Jones's, Murderkill, Mispilion, Broadkill, Indian, and other rivers and creeks are affluents of the Delaware and Atlantic. The most important streams are the Brandywine and Christiana creeks, the former coming in from Pennsylvania, and the latter from the southwest. These unite below Wilmington, and fall into the Delaware 1 m. below their junction. Many of the smaller rivers are navigable for coasting vessels, but the Christiana is the only one in the state that admits merchant ships. The coast along Delaware bay is marshy and low; along the Atlantic it is beset with sand beaches which enclose shallow bays, or more properly lagoons. Rehoboth bay, at the mouth of Indian river, is a basin of this description, but admits vessels drawing 6 ft. of water. At the S. extremity of the state is the Cypress swamp, 12 m. long and 6 m. wide, which contains a great variety of trees and evergreen shrubs, and is infested with noxious reptiles. Bog iron ore is found in the swamps, and shell marl occurs abundantly. In the north are deposits of kaolin or porcelain clay, which have supplied the Philadelphia works. In 1870 there were two iron mines in New Castle co., yielding 3,600 tons of ore, worth $10,800. The climate is in general mild and highly favorable to agriculture. The N. and more elevated region has a remarkably salubrious atmosphere; but where the surface is swampy, as in the S. part of the state, endemic sickness prevails to a considerable extent. In 1870 there were 1,561 deaths, of which 673 were from general diseases, 148 from diseases of the nervous, 69 of the circulatory, 226 of the respiratory, and 216 of the digestive system, and 60 from accidents and injuries. Of special diseases, consumption proved fatal in 296 cases, pneumonia in 126, enteric fever in 91, and cholera infantum in 87. For 8 or 10 m. inland from the Delaware the soils are generally rich clays, but thence to the swamps and southward sand prevails. The natural productions are similar to those of the middle region of the United States generally. Peach raising is one of the main industries. In 1870 the number of acres of improved land was 698,115. The productions were 895,477 bushels of wheat, 10,222 of rye, 3,010,390 of Indian corn, 554,388 of oats, 1,799 of barley, 1,349 of buckwheat, 362,724 of Irish and 85,309 of sweet potatoes, 3,123 of peas and beans, 60 of grass and 2,228 of clover seed, 356 of flaxseed, 41,890 tons of hay, 1,171,963 lbs. of butter, 58,316 of wool, 33,151 of honey, 800 of wax, 878 of flax, 800 of hops, 65,908 gallons of sorghum molasses, 1,552 of wine, and 758,603 gallons of milk sold. There were 16,770 horses, 3,584 mules and asses, 24,082 milch cows, 6,888 working oxen, 19,020 other cattle, 22,714 sheep, and 39,818 swine. There were be-

sides 1,863 horses and 4,000 cattle not on farms. The cash value of farms was $46,712,870; of farming implements and machinery, $1,201,644; wages paid during the year, including value of board, $1,696,571; estimated value of all farm products, including betterments and additions to stock, $8,171,667; value of orchard products, $1,226,893; of produce of market gardens, $198,075; forest products, $111,810; home manufactures, $33,070; animals slaughtered or sold for slaughter, $997,403; live stock, $4,257,323. In 1872, 3,569,526 baskets of peaches, yielding to the growers the sum of $1,327,810, and 3,472,000 quarts of strawberries, worth $227,260, were sent to market. In 1870 there were 800 manufacturing establishments, with 164 steam engines of 4,313 horse power, and 234 water wheels of 4,220 horse power; employing 9,710 hands, of whom 7,705 were males above 16 years of age, 1,199 females above 16, and 806 youth; capital invested, $10,839,093; wages paid, $3,692,195; value of materials, $10,206,397; of products, $16,791,382. The following table exhibits the number of establishments, hands employed, capital, &c., of the principal branches:

INDUSTRIES.	No. of establishments.	Hands employed.	Capital.	Value of materials.	Value of products.
Bleaching and dyeing	1	23	$30,000	$171,619	$192,049
Boots and shoes	67	373	112,253	243,131	490,698
Bricks	14	365	210,692	49,806	218,496
Carriages and wagons	50	714	517,450	360,730	842,176
Cars, freight and passenger	3	734	495,000	489,000	947,860
Cotton goods	6	726	1,165,000	704,733	1,060,898
Fertilizers	3	61	158,000	178,308	217,737
Flouring and grist mill products	103	277	777,554	1,746,850	2,067,401
Fruits, canned and preserved	3	411	63,450	90,620	212,273
Gunpowder	1	318	1,400,000	418,854	737,800
Iron, forged and rolled	6	305	544,200	526,830	823,836
" bolts, nuts, nails, &c	3	63	87,742	110,933	143,080
" castings (not specified)	18	471	592,275	761,339	1,085,557
Leather, tanned	10	85	227,000	171,746	244,993
" curried	7	70	96,024	225,384	279,962
" morocco, tanned and curried	10	439	586,994	951,649	1,401,317
" patent and enamelled	1	15	20,000	102,243	124,574
Lumber, sawed	80	311	290,424	229,856	405,041
Machinery (not specified)	4	165	198,000	99,740	216,211
" steam engines and boilers	4	305	307,000	186,900	423,217
Matches	2	189	139,000	203,552	321,300
Ship building, repairing, and ship materials	5	771	435,500	476,815	1,003,100
Woollen goods	8	393	383,000	388,054	569,721

The commerce of Delaware is small and principally domestic. For the year ending June 30, 1872, the imports from foreign countries amounted to $6,634; exports to foreign ports, $53,914; entered from foreign countries, 2 vessels of 342 tons; cleared for foreign ports, 5 vessels of 1,171 tons; entered in the coastwise trade, 27 steam vessels, 10,562 tons, and 39 sailing vessels, 7,304 tons; cleared in the coastwise trade, 2 steam vessels, 825 tons, and 7 sailing vessels, 1,449 tons; registered, enrolled, and licensed, 193 vessels with an aggregate tonnage of 16,654; built during the year, 17 vessels of 5,762 tons. The state in 1851 contained 39 m. of completed railroad; in 1861, 127 m.; in 1871, 227 m.; and in 1872, 254 m. The lines lying wholly or partly within its limits are: the Philadelphia, Wilmington, and Baltimore, connecting Philadelphia and Baltimore; the New Castle and Frenchtown (owned and operated by the above), from New Castle to Delaware Junction; the New Castle and Wilmington, between those two points; the Delaware railroad, from Delaware Junction to Delmar, on the Maryland line; the Dorchester and Delaware, from Seaford to Cambridge, Md.; the Kent County, from Townsend to Massey's Junction, Md.; the Maryland and Delaware railroad, from Clayton to Easton, Md.; the Junction and Breakwater, from Harrington to Lewes; the Wilmington and Reading, from Wilmington to Reading, Pa.; and the Wilmington and Western railroad, connecting Wilmington and Landenberg, Pa. The Chesapeake and Delaware canal connects by a channel navigable for coasting vessels the waters so called. It extends W. from Delaware City, 46 m. below Philadelphia, to Chesapeake City, on Back creek, a navigable branch of Elk river in Maryland, 13½ m., and is 66 ft. wide at the top and 10 ft. deep, with two tide and two lift locks, and a deep cut for 4 m. through a hill 90 ft. high; this work was completed in 1829 at a cost of $2,250,000. A canal between Salem creek and the Delaware river, begun nearly a century ago, has recently been completed. A ship canal is contemplated, to connect the waters of Chesapeake and Delaware bays, passing from Sassafras river across the state near Smyrna. There are in the state 11 national banks, with $1,528,185 capital; 5 state banks, with $780,000 capital; and 1 life and 4 fire insurance companies.—The constitution of Delaware grants the right of voting to all free white male citizens 21 years of age, who have resided in the state one year, and in the county one month next preceding an election, and have, "within two years next before the election, paid a county tax, which shall have been assessed at least six months before the election;" but persons between the ages of 21 and 22 years, otherwise qualified, may vote without the payment of any tax. Under the provisions of the 15th amendment to the con-

stitution of the United States, colored citizens have the right of suffrage on the same terms as whites. The general assembly consists of a senate of 9 members (3 from each county), chosen for four years, and a house of representatives of 21 members (7 from each county), chosen for two years. Senators must be 27 years of age, and "have, in the county in which they shall be chosen, a freehold estate in 200 acres of land, or an estate in real or personal property, or in either, of the value of 1,000 pounds at least." Representatives must be 24 years of age. Every member of the legislature must "have been a citizen and inhabitant of the state three years next preceding the first meeting of the legislature after his election, and the last year of that term an inhabitant of the county in which he shall be chosen." The pay of senators and representatives is $3 a day and mileage. The elections are held on the second Tuesday of November. The legislature meets biennially on the first Tuesday of January in odd years. The governor is elected for four years, and has a salary of $1,333; he must be 30 years of age, have resided in the state six years next before his election, and have been 12 years a citizen of the United States. He is not eligible for a second term. The state treasurer and auditor (salary $600 each) are elected by the general assembly for two years; the term of the secretary of state (salary $500 and fees) is four years. The attorney general (salary $500 and fees) holds office for five years. The governor has the power to remit fines and forfeitures, and to grant reprieves and pardons, except in cases of impeachment, and appoints all officers established by the constitution and by law, whose appointment is not otherwise provided for in the constitution. The house of representatives has the power of impeachment, two thirds of all the members concurring. The senate constitutes the court for the trial of impeachments, and two thirds of the senators must concur in a conviction. There are five judges, one of whom is chancellor and president of the orphans' court, one is chief justice of the state, and three are associate justices, one resident in each county. The chief justice and two of the associates form the superior court and court of general sessions, and all the judges except the chancellor form the court of oyer and terminer. The court of errors and appeals is composed of three or more judges. The orphans' court consists of the chancellor and the associate judge of the county. Judges are appointed by the governor, and hold office during good behavior. Probate courts are held by registers of wills, with appeal to the superior court. The salary of the chancellor and the chief justice is $2,000 each, and of the associate justices $1,700 each. Ministers of the gospel are prohibited from holding any civil office in the state. No act of incorporation can be passed except with the concurrence of two thirds of each branch of the legislature, and with a power of revocation reserved, nor for a longer period than 20 years, unless it be an incorporation for public improvement. Amendments to the constitution must be proposed by two thirds of each house, with the approval of the governor, and be ratified by three fourths of each branch of the legislature after the next general election of representatives. Conventions can be called only by the authority of the people, expressed at a special election ordered by the legislature. Treason, murder in the first degree, rape, arson when committed on a dwelling or building connected therewith, and breaking and entering a dwelling at night with intent to commit murder, rape, or arson, are punished with death. Murder in the second degree is punished by imprisonment for life. Other punishments are fines, imprisonment for a term of years, standing in pillory not more than an hour, and public whipping with not more than 60 lashes. The superior court has sole cognizance of actions for divorce. Adultery of the wife and impotence of either party at the time of marriage are grounds for absolute divorce. An absolute or a limited divorce, in the discretion of the court, may be granted for adultery of the husband, for extreme cruelty, for wilful absence of either party from the other for three years with the intention of abandonment, and for various other causes. The real estate, mortgages, stocks, and silver plate belonging to a woman at marriage, or to which she becomes entitled during marriage, are her separate property, not subject to the control nor liable for the debts of her husband; but she cannot make a conveyance without his consent. The valuation of property, according to the federal censuses, has been as follows:

YEARS.	ASSESSED VALUE.			True value of real and personal estate.
	Total.	Real estate.	Personal estate.	
1850...	.....	.....	.....	$21,062,556
1860...	$39,767,283	$26,273,803	$13,493,430	46,242,181
1870...	64,787,223	48,744,783	16,042,440	97,180,833

The total taxation in 1870 was $418,092, of which $83,666 was state tax, $189,994 county tax, and $144,432 town, city, &c., tax. The county debt amounted to $139,875; the town, city, &c., debt was $386,250. Previous to the civil war there was no state debt, but during its continuance bonds to the amount of $1,110,000 were issued to pay bounties to volunteers, and to aid drafted men to pay commutation and procure substitutes. Bonds to the amount of $352,000 have been lent to the Junction and Breakwater railroad, secured by a first mortgage on the entire road. The outstanding debt, Dec. 15, 1872, was $1,325,000; $137,000 having been paid, mostly during the preceding year. The bonds lent to the Delaware railroad, and guaranteed by the Philadelphia, Wilmington, and Baltimore company, the payment of which is amply provided for, are not regarded as

forming part of the state debt. Of the outstanding bonds, $165,000 mature Jan. 15, 1875; the remainder of the war bonds become due in January, 1885; while the $352,000 railroad bonds run till 1890. The state has a fund of $452,419 for the support of free schools, and a general fund of $471,800, both invested in local institutions and enterprises, leaving a net indebtedness of only $400,781. The oyster fund is derived from licenses, and from the lease of oyster plantations in the Delaware river. The receipts and expenditures from Jan. 18, 1871, to Dec. 15, 1872, were as follows:

RECEIPTS.

Source.	Amount.
Vacant land	$112 07
Interest on investments	26,272 50
Clerks of the peace, for licenses	55,587 72
Fines and forfeitures	441 63
Railroads	45,858 62
Tax on bank shares	5,695 76
County treasurers	53,762 84
" officers (clerks of courts)	4,448 52
Tax on insurance companies	1,650 00
Oyster fund	5,688 80
Belonging to the school fund	5,189 71
Total	$204,708 17

EXPENDITURES.

Purpose.	Amount.
Railroad instalment	$1,150 00
Attorney general	1,125 00
Coupons and bonds	169,871 60
Judiciary	7,950 00
Executive and secretary of state	2,800 00
Publishing laws and printing	602 30
Librarian	150 00
Legislative committee	1,000 29
Resolutions of general assembly	46 00
Vol. ii. of Houston's reports	1,000 00
Incidental expenses	16 42
Total	$185,711 61

At the latter date the treasury contained $58,046 82. The rate of interest is 6 per cent. There is no state prison, convicts being confined in the county jails. The blind, deaf and dumb, and insane are provided for by the counties, when poor, or sent to the Pennsylvania institutions, at the expense of the state. Delaware is entitled to one representative in congress. —The school system of Delaware is very imperfect, and has remained substantially the same for many years. There is no state or county superintendence, educational matters being left to the voters of the school districts, of which there are 370. The voters of each district meet annually on the first Saturday of April, and elect one member of the school committee, who serves for three years. They also decide what sum shall be raised for school purposes for the ensuing year, and whether it shall be raised by taxation; if a school tax is negatived, the sum agreed upon may be raised by subscription. Not more than $400 can be appropriated for schools in each district, nor more than $500 for building and repairing school houses; but a minimum, fixed by law, must be raised by taxation or subscription to entitle the district to its share of the state school fund. The schools are free to all white children over five years of age. The committees have general supervision of schools in their respective districts, and are authorized to levy a tax for the support of schools in each district of New Castle co. of $100; of Kent co., $50; and of Sussex co., $30. In the city of Wilmington the interests of education are better cared for. Its schools are under the immediate supervision of a superintendent appointed by the board of education, which consists of 30 members elected by the people, and has full control both of the schools and of the amount to be raised for their support. The state school fund is derived from the income of the share of the "surplus revenue" received by Delaware from the United States, and from a portion of the proceeds of certain fees and licenses. In 1869 $113,727 77 was expended for school purposes, of which $81,697 46 was raised by contribution, and $32,030 31 derived from the school fund. According to the federal census of 1870, 19,965 children attended school during the year, of whom 9,862 were white males and 8,908 white females, 663 colored males and 532 colored females. There were 375 schools of all kinds, having 147 male and 363 female teachers; income for year ending June 1, $212,712, of which $120,429 was derived from taxation and public funds, and $92,283 from other sources, including tuition fees; 326 of the schools, having 388 teachers, were public, of which one was a normal school, 12 were graded common schools, and 313 ungraded schools. Of those not public, 11, including 2 colleges and 9 academies, were classical schools, 14 day and boarding schools, and 24 parochial and charity schools. The state makes no provision for the education of colored children. The Delaware association for the moral improvement and education of the colored people, a charitable organization, had 20 schools in operation in 1871, with 1,040 pupils enrolled, and an average attendance of about 800. The Delaware state normal university, at Wilmington, was organized in 1866 and incorporated in 1867, but from political motives an act was passed in 1871 to repeal its charter. It continues, however, in successful operation, and in 1871–'2 had 11 instructors (6 male and 5 female) and 221 students, of whom 68 were females. It consists of a normal and high school, with 17 male and 18 female students; a mechanical and commercial school, with 79 students (male); a select school for the ordinary English branches, with 29 male and 29 female students; and a primary school, with 28 male and 21 female pupils. The university confers the degree of bachelor of teaching. The Wesleyan female college, at Wilmington, organized in 1839, in 1872 had 12 instructors, 132 students, of whom 60 were in the preparatory department, and a library of 3,500 volumes. Delaware college, at Newark, a state institution, organized in 1870, in 1872 had 10 instructors, 105 students, of whom 93 were in the preparatory department, and a library of 6,000 volumes. It has recently been opened to female students. The congressional

grant of 90,000 acres of land for an agricultural college has been given to this institution, and an agricultural department with 3 professors has been organized. In 1870 there were 473 libraries in the state, containing 183,423 volumes, of which 221, with 91,148 volumes, were private; 223, with 55,851 volumes, Sabbath school; 23, with 9,400 volumes, church; 5, with 23,024 volumes, circulating libraries; and 1, with 4,000 volumes, the state library. There were 17 newspapers and periodicals, having an aggregate circulation of 20,860. Of these, 1 was daily, 3 were semi-weekly, 12 weekly, and 1 monthly. The number of church organizations was 267, having edifices, sittings, and property as follows:

DENOMINATIONS.	Edifices.	Sittings.	Value of property.
Baptist	7	2,950	$131,000
Episcopal	27	8,975	246,850
Friends	8	3,425	64,600
Lutheran	1	300	5,000
Methodist	166	51,924	781,000
New Jerusalem	1	300	20,000
Presbyterian	32	13,375	384,500
Roman Catholic	8	6,000	170,000
Unitarian	1	300	17,000
Universalist	1	350	4,000
Total	252	87,899	$1,823,950

—Delaware takes its name from Lord De la Ware or Delawarr, governor of Virginia, who entered the bay in 1610; but the discovery of the Delaware was made by Hudson in 1609. In 1629 one Godyn, a director in the Dutch West India company, in whose service Hudson had sailed, purchased of the natives a tract of land near the mouth of the river; and next year De Vries, with 30 colonists from Holland, settled near Lewes. Three years later the whole colony was destroyed by the natives. In 1637 the Swedish West India company sent out a colony of Swedes and Finns, which arrived at Cape Henlopen early in 1638, and, after purchasing all the lands from the cape to the falls near Trenton, erected a fort at the mouth of Christiana creek. They named the country Nya Sveriga, or New Sweden. The subsequent settlements of the Swedes were mostly within the present limits of Pennsylvania, and in 1643 their headquarters were erected on the island of Tinicum, a few miles below Philadelphia. These proceedings were protested against by the Dutch of New Amsterdam, who claimed the country by right of discovery and settlement, and with a view to the expulsion of the intruders built Fort Casimir (now New Castle), 5 m. S. of Fort Christiana. This, however, was captured by the Swedes in 1654; but the next year the Dutch from New Netherlands attacked and reduced the Swedish forts, and sent to Europe all the colonists who refused allegiance to Holland. Thus ended the transient connection of Sweden with the colonial history of the United States. From this period to 1664, when New Netherlands was conquered by the English, the Delaware settlements continued under the control of the Dutch authorities. The duke of York now came into possession of all the Dutch had occupied, and the English laws were established on both sides of the river. In the mean time, however, Lord Baltimore asserted his claim to the country on the west side of the river as a part of his grant, which extended to lat. 40° N., but excepted tracts then already occupied; and frequent incursions were made from Maryland with the view of driving away the settlers. At length William Penn, having obtained a grant of Pennsylvania, and being desirous of owning the land on the west bank of the Delaware to the sea, procured from the duke of York a release of all his title and claim to New Castle and 12 m. round it, and to the land between this tract and the sea. In October, 1682, he arrived at New Castle, and in the presence of the inhabitants produced his deeds and accepted the surrender of the territory. Lord Baltimore still asserted his claim, but Penn resisted it on the ground that at the time of the grant of Maryland the territory was occupied, and in 1685 the lords of trade and plantations decided in Penn's favor. The conflicting claims, however, were subsequently adjusted by compromise. The tracts now constituting the state Penn called the "territories or three lower counties on the Delaware." For 20 years they were governed as a part of Pennsylvania, each county sending six delegates to the general assembly. In 1703 the territories obtained liberty to secede, and were ever afterward allowed a distinct assembly. But the proprietary retained all his rights until the commencement of the revolution, and the same governor uniformly presided over Pennsylvania and Delaware. Sheltered by the surrounding colonies, Delaware enjoyed entire exemption from wars, except those in which as a part of the British empire she was obliged to participate. In the war with France which terminated in 1763, she was second to none in active zeal; and in the revolutionary war the Delaware regiment was one of the most efficient of the continental army. In 1776 the inhabitants declared themselves an independent state, and framed a constitution. In 1792 a second constitution was established, which, as amended in 1831, still forms the fundamental law of the state. Delaware was the first state to ratify the federal constitution, its approval being given Dec. 7, 1787. Though a slave state, it refused to secede, and during the civil war furnished several regiments to the Union armies. (See supplement.)

DELAWARE, the name of five counties in the United States. **I.** A S. E. county of New York, bounded N. W. by the E. branch of the Susquehanna and S. W. by Delaware river, which separates it from Pennsylvania; area, 1,550 sq. m.; pop. in 1870, 42,972. It is drained by the head streams of the Delaware, has a hilly surface, and the soil in the valleys is exceedingly fertile. The Delaware and Susquehanna rivers

are here navigable by boats, and vast quantities of lumber are annually transported upon them. The Erie railway passes through the S. part, and the Albany and Susquehanna railroad skirts the N. W. boundary. The chief productions in 1870 were 11,497 bushels of wheat, 26,120 of rye, 126,097 of Indian corn, 689,084 of oats, 162,585 of buckwheat, 432,443 of potatoes, 167,975 tons of hay, 6,135,715 lbs. of butter, 130,472 of wool, 407,589 of maple sugar, and 307,431 of hops. There were 10,295 horses, 46,699 milch cows, 21,515 other cattle, 33,481 sheep, and 9,551 swine; 11 flour mills, 71 saw mills, 19 tanneries, 7 currying establishments, 9 manufactories of agricultural implements, 28 of carriages and wagons, 25 of barrels and casks, 10 of furniture, 13 of saddlery and harness, 10 of tin, copper, and sheet-iron ware, and 6 of woollen goods. Capital, Delhi. **II.** A S. E. county of Pennsylvania, bordering on Delaware, separated from New Jersey on the S. E. by Delaware river, and drained by a number of small streams; area, 108 sq. m.; pop. in 1870, 39,403. It was originally settled by Swedes. The surface in the S. E. is generally level, but in other parts it is hilly. A large portion of it is occupied as grazing land, and the markets of Philadelphia are mainly supplied from its dairies. The soil is not naturally fertile, but by the use of manure it has been rendered extremely productive. Mica slate and gneiss are found. Whetstones are procured near Darby, and extensively exported. Water power is abundant. The Philadelphia, Wilmington, and Baltimore, the Pennsylvania Central, the West Chester and Philadelphia, and the Philadelphia and Baltimore Central railroads traverse the county. The chief productions in 1870 were 121,398 bushels of wheat, 379,417 of Indian corn, 135,052 of oats, 197,295 of potatoes, 32,140 tons of hay, and 1,143,051 lbs. of butter. There were 4,219 horses, 12,766 milch cows, 3,592 other cattle, and 7,759 swine; 27 flour mills, 18 saw mills, 18 manufactories of cotton goods, 9 of thread, twine, and yarn, 26 of woollen goods, 1 of worsted goods, 13 of bricks, 1 of ground dye woods and stuffs, 5 of machinery, 3 of paper, 2 of sashes, doors, and blinds, 6 ship building and repairing establishments, and 1 molasses and sugar refinery. Capital, Media. **III.** A central county of Ohio, traversed by the Scioto and Olentangy rivers, well supplied with water power; area, 478 sq. m.; pop. in 1870, 25,175. It has an even surface and a fertile soil. The Cleveland, Columbus, Cincinnati, and Indianapolis railroad and Springfield branch cross it. The chief productions in 1870 were 242,025 bushels of wheat, 932,760 of Indian corn, 206,688 of oats, 116,613 of potatoes, 25,776 of flax seed, 39,303 tons of hay, 630,327 lbs. of butter, 475,301 of wool, 69,573 of maple sugar, and 2,312,427 of flax. There were 7,705 horses, 6,770 milch cows, 9,404 other cattle, 110,832 sheep, and 20,723 swine; 8 flour mills, 9 saw mills, 3 tanneries, 6 currying establishments, 3 manufactories of agricultural implements, 1 of bagging, 10 of bricks, 20 of carriages and wagons, 1 of linseed oil, 1 of paper, and 4 of woollen goods. Capital, Delaware. **IV.** An E. county of Indiana, drained by White and Mississinewa rivers, and consisting in great part of low marshy prairies, suitable for pastures; area, 400 sq. m.; pop. in 1870, 19,030. The surface is level, and the soil fertile. The Fort Wayne, Muncie, and Cincinnati, and the Cleveland, Columbus, Cincinnati, and Indianapolis railroads traverse it. The chief productions in 1870 were 451,502 bushels of wheat, 674,477 of Indian corn, 63,546 of oats, 45,387 of potatoes, 10,774 tons of hay, 422,108 lbs. of butter, and 76,251 of wool. There were 6,849 horses, 4,546 milch cows, 6,863 other cattle, 23,793 sheep, and 24,274 swine; 11 flour mills, 9 saw mills, 2 manufactories of boots and shoes, 2 of barrels and casks, 4 of furniture, 1 of machinery, and three of woollen goods. Capital, Muncie. **V.** An E. county of Iowa, well supplied with water and timber, and having a healthy climate, fertile soil, and rough hilly surface; area, 576 sq. m.; pop. in 1870, 17,432. The Dubuque and Sioux City railroad traverses it, and the Dubuque and Southwestern railroad crosses the S. E. corner. The chief productions in 1870 were 695,137 bushels of wheat, 19,324 of rye, 981,010 of Indian corn, 677,612 of oats, 49,515 of barley, 116,877 of potatoes, 42,790 tons of hay, 101,545 lbs. of cheese, 674,506 of butter, and 41,243 of wool. There were 8,591 horses, 9,312 milch cows, 13,125 other cattle, 11,395 sheep, and 27,376 swine; 9 flour mills, 6 saw mills, 13 manufactories of carriages and wagons, 1 of machinery, 8 of saddlery and harness, and 1 of woollen goods. Capital, Delhi.

DELAWARE, or **Delaware Court House,** a town and the capital of Delaware co., Ohio, on the right bank of the Olentangy river, which is here crossed by a bridge, 24 m. N. of Columbus, and at the intersection of the Cleveland, Columbus, Cincinnati, and Indianapolis railroad with its Springfield branch; pop. in 1870, 5,641. It is pleasantly situated on rolling ground, and is neatly built. It contains a medicinal spring, which is much resorted to. There are several machine shops, an oil mill, manufactories of cordage, crash, &c.; two national banks, and a large hotel. It is the seat of the Ohio Wesleyan university, organized in 1844, which in 1871 had 9 instructors, 417 students, of whom 74 were in the preparatory department, and a library of 13,000 volumes. A theological department is connected with the university. The Ohio Wesleyan female college, organized in 1863, in 1871 had 10 instructors and 210 students.

DELAWARE, Lord. See DELAWARR.

DELAWARE BAY, an arm of the sea, separating the states of New Jersey and Delaware, and communicating with the Atlantic between Cape May (lat. 38° 56′ N. and lon. 74° 58′ W.)

and Cape Henlopen (lat. 38° 47′ and lon. 75° 5′ 30″), which are about 15 m. apart. It is about 60 m. long to the entrance of Delaware river, of which it is a broad estuary, and from 25 to 30 m. in greatest breadth, contracting toward the north to a width of less than 5 m. The main channel admits the largest vessels to the head of the bay and into the river, having from 35 to 75 ft. of water; but the course is made tortuous by the numerous shoals which nearly fill the central portion. The United States government has constructed an extensive breakwater at Cape Henlopen, forming a safe and capacious harbor, with a depth of from 4 to 6 fathoms. (See BREAKWATER.)

DELAWARE RIVER (Indian name, *Makeriskitton*), a river of the United States, formed by two small streams called the Oquago, or Coquago, and the Popacton, which rise on the western declivity of the Catskill mountains, in Delaware co., N. Y., and unite on the boundary line between New York and Pennsylvania, near the N. E. angle of the latter. Flowing S. E., it separates those states for about 70 m., until it reaches Kittatinny (or Shawangunk) mountain, near Port Jervis, N. Y. At this place it makes a sharp turn to the S. W., and forms the dividing line between New Jersey and Pennsylvania. At the N. extremity of Northampton co., Pa., it passes through a defile formed by perpendicular rocks on either side 1,000 or 1,200 ft. high, known as the Delaware Water Gap. A few miles below Easton it turns again to the S. E., and after passing Trenton meets tide water 132 m. from the sea. The stream, turning again to the S. W., now becomes much wider, and acquires sufficient depth for the passage of steamboats. Philadelphia, on the right bank, is the head of navigation for the largest ships. On the other side of the river, in New Jersey, are the towns of Burlington and Camden, the latter being just opposite Philadelphia. The channel is here about 1 m. wide, and divided by a small island. A number of other islands, none of them of great extent, occur in various parts of the stream. Bridges span it at Trenton and several other points. About 40 m. below Philadelphia the river discharges itself into Delaware bay, after a total course of 300 m. In the lower part it separates New Jersey from Delaware. Its chief tributaries are the Lehigh and Schuylkill in Pennsylvania. The Delaware drains about 11,000 sq. m. of territory. The Delaware and Hudson and the Morris canals connect the stream with the Hudson. The Erie railway runs in the valley of the Delaware for a distance of nearly 90 m. The shad fisheries in the lower part of the river are very profitable.

DELAWARES, a tribe of the Algonquin family of North American Indians, dwelling when they were first known by the whites in detached bands under separate sachems, on the Delaware river, and calling themselves Renappi (the collective term for men), or as now written Lenape or Lenno Lenape. The Dutch began to trade with them in 1616, and maintained a friendly intercourse with the various clans, the most important being the Sankhicans at the falls of the river. In 1632 the Dutch settlement of Swanendael was utterly destroyed by them, but trade was soon resumed. The Swedes on settling on the river were well received, and made attempts to Christianize the Indians, Luther's catechism being translated into their language by Campanius, and printed in Stockholm. The Delawares claim to have come from the west with the Minquas or Conestogas, after having driven from the Ohio the Allegewi (perhaps the Alkansas or Arkansas of the Illinois traditions). The Minquas soon reduced the Delawares to a state of vassalage, and when they were conquered by the Five Nations, the latter termed the Delawares women. At a later period the Delawares claimed to be the source of all the Algonquin tribes, and were styled grandfathers by many of them. They formed three clans or families, the Turtle, Turkey, and Wolf. The Dutch and Swedes bought lands of the Renappi, who had to strike inland for game to supply furs. The English after the conquest of New Netherlands kept up the trade, and Penn with his followers, occupying the land in still greater numbers, bought large tracts; all the Indians within his limits were at the time estimated at 6,000, with ten tribes of whom he made treaties. The Delawares complained bitterly that they were grossly defrauded in the interpretation of the treaty, called the "walking treaty," and showed a reluctance to remove; but in 1742 the Pennsylvania authority called upon the Six Nations, who haughtily ordered the Delawares, as women, to retire. The Dutch, penetrating to the Minnisink country, had already induced the Indians there to retire to the Susquehannas, where they became known as Minsees or Munsees, or joined that tribe. The Nanticokes of Maryland, a kindred tribe, also centred there. From a gentle, peaceful tribe, the Delawares, now thrown together in presence of warring nations, became warlike and energetic, and assumed a mastery. In a war with the Cherokees they reached the Ohio; and by consent of the Wyandots and Kickapoos, who certainly had no rights, part of the Delawares settled there and remained till 1773. In 1741 the Moravians began to labor among the Delawares near Bethlehem and Nazareth, Pa., and soon had a little church of converts. When the French attempted to gain the valley of the Ohio, they won some of the Five Nations, and through them the Delawares. Many took up arms and fought under the French flag at Braddock's defeat and elsewhere; but the Senecas, again joining the English, turned on the Delawares and Munsees, and attacked one of their towns on the Susquehanna. Part of the tribe, guided by the Moravians, had always held to the English; others made peace at

Easton in 1757, and the rest after the fall of Fort Duquesne. The Delawares then centred at Wyalusing and other points on the Susquehanna, the Christian Indians with their missionaries apart. A number soon after settled on the Muskingum, while the Munsees halted on the Alleghany. Smarting under a sense of wrong, many Delawares, led by a prophet, took part with Pontiac, and were among those who besieged Detroit, Fort Pitt, and other frontier posts. They were totally defeated by Bouquet at Bushy Run in August, 1763, Teedyuscung, their chief, being killed. The whites then ravaged the Delaware towns on the Susquehanna. The Moravian converts, who had taken no part in the war, fled to Philadelphia; and they were already in New Jersey, on the way to New York, when that colony refused to admit them. After remaining nearly a year at Philadelphia, they returned to the Susquehanna. The hostile Delawares, under Custaloga and Turtle Heart, made peace on the Muskingum in 1764, and with Croghan at Fort Pitt in 1765; the great prophet, in the name of the Great Spirit, directing them to lay down the hatchet. A general emigration followed, and by 1768 the Delawares ceased to exist east of the Alleghanies. The Moravians emigrated with their flock, and on the Ohio the number of Christian Indians increased; but the hostile feeling prevailed, and Delaware bands kept the field till they were completely broken in the bloody battle at Pleasant Point, in September, 1774. When the revolutionary war began, this party, won over by the English, renewed hostilities, although a part of the nation, with Capt. White Eyes, Capt. Killbuck, and Capt. Pipe, made a treaty with congress at Fort Pitt in 1778. The Christian Indians had been settled on the Muskingum in 1772 by the great council of the Delaware nation, and formed three towns, Gnadenhutten being that of the Delawares. They took no part in the war, but kept cultivating their fields till 1781, when the English captured their towns and removed them to Sandusky. A part of these Indians, returning to their old homes to save some of their crops, were attacked by the Americans, who massacred 90; the rest fled to Huron river and to Canada. The treaty of Fort McIntosh in 1785, renewed at Fort Harmar in 1789, guaranteed to the Delawares the lands between the Cuyahoga and Miami, up to Lake Erie, and ordinances of 1785 and 1787 reserved lands on the Muskingum for the Christians; but difficulties arose, and these Delawares formed the town of Fairfield, on the Thames, in Canada, on lands granted by the English government; only a small band returned to the Muskingum. The rest of the tribe were still hostile in heart, and had 480 warriors near Grand Glaize, 400 of whom, under Buckongehelas, were with the Miamis in the defeat of St. Clair, in November, 1791. Upon Wayne's victory they made peace at Greenville in 1795; after which the government, by a series of treaties, obtained the cession of the lands claimed by them between the Ohio and Wabash and elsewhere. In 1808 there were 800 at Wapeminskink and other towns on White river, a small band on Whitewoman creek near Sandusky, a few on the Muskingum, and a large body at Fairfield. In the war with Great Britain the Delawares refused to join Tecumseh, but preserved their fidelity to the United States. They joined the United States in a curious treaty at Greenville, July, 1814, in giving peace to the hostile tribes. The body in Canada suffered, Fairfield being destroyed by the Americans in 1814. In 1818 the Delawares ceded all their lands to the United States by the treaty of St. Mary's, and removed to White river, Missouri, to the number of 1,800, leaving only a small band in Ohio. Another change soon followed. Some went south to Red river; but the mass of the nation, by treaty of Oct. 24, 1829, were settled on the Kansas and Missouri. They numbered about 1,000; were brave, enterprising hunters on the plains, cultivated some land, and were friendly to the whites. By this time the Baptists and Methodists had missions and schools among them, the Moravians still caring for the old Christian band. Some Munsees and Delawares from Wisconsin joined them in 1844, and some were with the Shawnees. In the west they met the experience of all; they suffered from the Sioux and other wild tribes, and from lawless whites. They sold to the United States in 1853 all the lands granted them except a suitable reservation in Kansas, applied the money judiciously, improved their farms, and built a Methodist church. They were unaffected by the Kansas troubles, except a few who were among the Shawnees; and during the civil war, when they numbered 1,085, they sent to the United States army 170 out of their 201 able-bodied men, and proved efficient soldiers and guides in operations against the south and the Sioux. They had now given up most of their Indian ways, had abandoned wigwams for comfortable houses, and, though too indolent, still advanced in agriculture. In 1866 their reservation was cut up by the Pacific railroad, and they finally sold the whole to the Missouri railroad, and early in 1868 settled on lands on the Verdigris and Cane, which they had acquired from the Cherokees. Here the main body of the Delawares still are; a party who went to the Peorias having returned, and small bands only still lying without among the Wichitas and Kiowas. They adopted a code of laws in 1866; but a treaty made with the United States in that year having authorized them to become citizens, they elected to do so, received and divided the funds held for their benefit, took lands in severalty, and ceased to be regarded as a tribe. To the last the old clan division of Turtle, Turkey, and Wolf was retained, and will probably survive for a time.—The language of the Delawares is one of the best

known of the Algonquin dialects; the works of Campanius and Loskiel, Zeisberger's Delaware-English spelling book (1776), and his grammar, published by the American philosophical society (1827), and Duponceau's "Memoir on the Grammatical System of some North American Languages," having afforded students at an early date the means of comparison. (See AMERICAN INDIANS, LANGUAGES OF THE.) The number of works issued on the language is comparatively large. Tamanend, or Tammany, whose name has figured so much in American politics, was a Delaware chief of the mythical period. The Jesuit fathers of Missouri reckon among them a priest, Watomika, who is a Delaware.

DELAWARR, or **Delaware, Thomas West,** lord, governor of Virginia, died in 1618. He succeeded his father as third Baron Delawarr in 1602, was appointed governor and captain general of Virginia in 1609, and arrived at Jamestown June 9, 1610, with three ships, after a voyage of three months and a half. He was the first executive officer of Virginia who bore the title of governor. His coming infused new spirit into the colonists, who were reduced to despair by privation and misgovernment, and his discreet and energetic management restored discipline and industry. He established a post at Kiquotan, now Hampton, at the mouth of the James river, and built two forts which he named Henry and Charles, after the king's sons. In March, 1611, prostrated by ill health, he embarked for the island of Nevis in the West Indies; but, driven north by contrary winds, the vessel put in at the mouth of a large river, called by the natives Chickohocki, which received the name of Delaware in his honor. He then returned to England. In April, 1618, urged by the colonists to return in consequence of the oppressive rule of Argall, he set sail again for Virginia, but died on the voyage. This is the uniform statement of the writers on Virginia, but in "Royal and Noble Authors" he is said to have died at Wherwell, Hants, June 7, 1618. He published "A true Relation to the Counsell of Virginia" (1611; reprinted, 1858). The present Earl Delawarr, Charles Richard Sackville-West, is his lineal descendant.

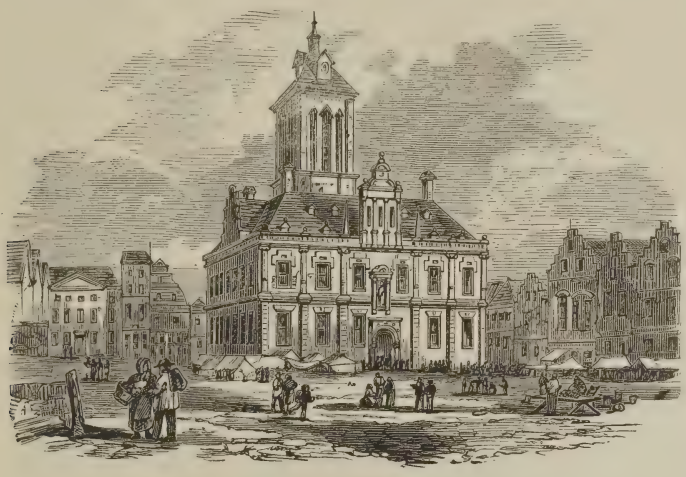
DELBRÜCK, Martin Friedrich Rudolph, a German statesman, born in Berlin in 1817. He is the son of a clergyman, who was intrusted with the education of the crown prince, afterward Frederick William IV. of Prussia, and of Prince William, the present emperor of Germany. He studied law at the universities of Bonn, Göttingen, and Berlin, and after some minor judicial employments was called to assist in the ministry of finance, and obtained in 1844 the direction of the bureau of commerce. In 1848 he was a member of the ministry appointed after the revolutionary outbreak of March 18, and upon its resignation was made chief of the ministry of commerce. In this capacity he was of great service to Prussia by his skilful consolidation of the Zollverein, and by negotiating several advantageous commercial treaties with France, Austria, England, Belgium, and Italy. At the creation of the chancery of the North German confederation in 1867, Bismarck selected him to take full charge of it as president, and designated him as his substitute and representative at the North German diet and in the Prussian cabinet. Delbrück was made Prussian minister of state in 1868, and in 1871, after the creation of the empire, he received a large dotation from the German diet in recognition of his services, and was confirmed as president of the imperial chancery.

DELESCLUZE, Louis Charles, a French revolutionist, born at Dreux, Oct. 2, 1809, killed in Paris, May 26, 1871. He early displayed activity as a journalist and political agitator, and participated in revolutionary movements and conspiracies under Louis Philippe, the republic of 1848, and the empire. He edited a number of radical journals, was frequently fined, and spent a part of his life in prison or exile. In 1858 he was transported to Cayenne for ten years, but was freed by the amnesty of the following year, when he resumed his agitation, and published *De Paris à Cayenne, journal d'un transporté.* In 1868 he founded the *Réveil* newspaper. During the siege of Paris he vehemently opposed the government of national defence, and in 1871 became conspicuous as a leader of the commune of Paris. As such he evinced equal zeal and energy, and ultimately reckless fury. Despairing of success, he voluntarily sought death near the barricades of the château d'Eau, by the side of those whom he had encouraged in the revolt. Afterward venturing into the streets, he was struck by three balls and mortally wounded. Important documents were found on his person.

DELESSERT, Benjamin, a French financier and naturalist, born in Lyons, Feb. 14, 1773, died in Paris, March 1, 1847. He served as a captain of artillery under Pichegru, but soon resigned to assume the direction of his father's bank. He was connected with Achard in the earliest experiments for the manufacture of beet-root sugar; and in 1801 he established a cotton mill at Passy. Before he was 30 he was appointed regent of the bank of France, which post he held for nearly half a century. He formed magnificent botanical and conchological collections; his herbal, which had been commenced for his sister by J. J. Rousseau, contained 86,000 specimens of plants, 3,000 of which were previously unknown. His botanical collections are illustrated in the important work, in which he was a collaborator with De Candolle, *Icones selectæ Plantarum* (2 vols. 4to, 1820–'46), and his conchological treasures were described in 1847 by Dr. Chenu. He published a collection of maxims and prayers, *Le guide du bonheur* (1839), and other writings.

DELFT, a town of the Netherlands, in the province of South Holland, 8 m. N. W. of Rotterdam, on the river Schie, and connected by canals and railways with the other principal

towns of Holland; pop. in 1870, 22,909, of whom 7,500 were Catholics, and the remainder chiefly Protestants. It is intersected in all directions by canals, which are crossed by about



Town Hall.

70 bridges. Among the principal public buildings are the palace or *prinsenhof*, originally the convent of St. Agatha, once the occasional residence of William I. of Orange, and the scene of his assassination (July 10, 1584), now converted into barracks; the town hall; the new church, with a huge square tower and celebrated chimes, containing the mausoleum of William I., and the tombs of the Orange family, and of Hugo Grotius; the old church, distinguished by a leaning tower, containing the oldest organ in Holland, the monument of Admiral van Tromp, and the tomb of Leeuwenhoeck; two Roman Catholic churches, several churches for various Protestant denominations, and a chapel for Jansenists. There are several associations for the promotion of art, science, and literature, and various benevolent institutions. Deft was formerly celebrated for its potteries (delft ware), but this manufacture is now almost entirely superseded by the superior articles made in England. The little earthenware now made here is of the coarser kind. Of the other manufactures, those of mathematical instruments are most renowned. Near the entrance of the town is the state arsenal of Holland, originally the Dutch East India house, to which a college of engineers is attached. Delft was almost entirely destroyed by fire in 1536, and again in 1654, when an explosion of the powder magazine demolished 500 houses and killed 1,200 persons. But by being frequently rebuilt, the town was so much improved that Pepys in his diary (May 18, 1660) describes it as "a most sweet town, with bridges and rivers in every street." In 1797 the Delft religious association (*Christo sacrum*) was established here by members of the French Reformed church, with the view of forming a union between all Christian sects, but is now almost extinct.—Delft is connected by a canal with its port, DELFT HAVEN or DELFTSHAVEN, a small town on the right bank of the Maas, 2 m. from Rotterdam, with about 3,000 inhabitants, engaged in distilleries, herring and cod fisheries, and ship building. Delft Haven is celebrated in American history as the place where the pilgrim fathers embarked for Southampton, July 22, 1620.

DELFT WARE, a kind of pottery of clay, or clay mixed with sand, and covered with a white enamel, which gives to it the appearance of porcelain. The vessels made of this preparation are first moulded, then slightly baked, in which state they readily receive the enamel, when a stronger heat is applied for the purpose of fusing the enamel uniformly and to complete the baking process. Sometimes this pottery is finely ornamented with painting. The more common and coarser kinds, however, better resist a sudden heat. The preparation of the enamel is an important part of the process. It should be made so opaque that the ware cannot be seen through it.

DELHI, Dehli, or **Dilhi,** a city of British India, capital of a commissionership and a district of the Punjaub, and formerly of the Mogul empire, situated on an offset of the Jumna, about a mile from the right bank of the main stream, 115 m. N. N. W. of Agra, 40 m. S. W. of Meerut, and 830 m. N. W. of Calcutta; lat. 28° 39′ N., lon. 77° 18′ W.; pop. about 160,000, mostly Hindoos and Mohammedans, in nearly equal proportions. The city, which is 7 m. in circumference, is built on two rocky eminences, and enclosed, except on part of the water front, by a wall of red sandstone 30 ft. high, with bastions, martello towers, and 11 gates, four of which face the river. The seven landward gates are all colossal arches of freestone, defended by round towers. There is also a dry ditch 20 ft. wide, and on the island formed by the Jumna and its offset stands the old fort of Selimgurh, whence a bridge of boats crosses the main stream. The defences were erected by Shah Jehan, and have been improved by the British. The streets are all narrow, with the exception of two, which are respectively 90 and 120 ft. in width, and both of which are provided with a small raised watercourse bordered with trees. The Chandnee Chowk, or silversmiths' street, the main thor-

oughfare, is lined with gay bazaars, and is usually thronged with busy crowds. At its head, abutting on the river and defended by a broad moat, stands the imperial palace of Shah Jehan, once of almost unparalleled magnificence, but now filthy and neglected. It is a collection of buildings surrounded by a wall 40 ft. high and three fourths of a mile in circuit, including a private royal mosque, large gardens, and apartments for several thousand persons. Here, too, are the white marble council chamber with its four cupolas, and the public audience hall in which stood the famous "peacock throne," formed entirely of gold and jewels, and valued at $30,000,000. The *jumma musjid*, or chief mosque, in Mohammedan eyes the wonder of the world, built by Shah Jehan in six years (1631–'7), stands on a paved platform 450 ft. square, on a rocky height near the centre of the city. It is approached by broad stone steps, and makes one side of a quadrangle, the other sides of which are formed by pavilions and arcades. It is 261 ft. long, lined and faced with white marble, surmounted by three domes of the same material striped with black, and having at each end of the front a high minaret. This magnificent building has been restored of late years by the British government. Scattered through and around the city are more than 40 other mosques, some mean Hindoo temples, and tombs of the emperors and Mussulman saints. The Cuttub (Kuttub or Kutb) Minar, 9 m. S., is 242 ft. high; and close to it is the country residence of the former emperors. Among the European buildings are the British residency, St. James's and several missionary churches, a bank, a lunatic asylum, the courts of justice, and a government



Delhi.

college attended chiefly by native students. The last is managed by a council of Europeans and natives, and is divided into four departments: English, Arabic, Persian, and Sanskrit. There are, moreover, in and near the city, about 300 schools, besides a number of missionary schools. There are two arsenals, one outside the walls, the other within. The latter before 1857 was the most important in India, and contained 300 guns and mortars, 20,000 stand of arms, and 200,000 shot and shells, besides gunpowder and other warlike stores. The Jumna is impregnated with natron, but the city is supplied with water by a canal 70 m. long, built under Shah Jehan and restored by the British. Another, called the Doab canal, for irrigation, built by the same emperor, fed by the Jumna, and joining that river again near here after a course of 135 m., was also repaired by the British in 1830. Delhi has manufactories of cotton cloths, indigo, and shawls, and carries on an active trade in silks and jewelry. The bazaar called Chadni Chauk is described as one of the best in India. The exports and imports of the city, exclusive of railway traffic, are valued at £3,250,000 annually. Delhi is situated on the grand trunk road from Calcutta to Lahore, being the northern terminus of the East Indian railway, and being connected with Amritsir by the Delhi railway. — According to Abul Fazl, no less than seven cities have occupied the site of Delhi. The first was Indraprastha, or Indraput, where the Hindoo rajahs had their capital at least as early as the 10th century. It must have been a magnificent city, judging from its vast ruins, which overspread the country around modern Delhi, on both sides of the river. About 1193 it was captured by Mohammed of Ghore; and Kuttub ud-Din, a lieutenant of the victor, founded here

a dynasty known to Europeans as the Patan or Afghan, and to oriental historians as that of the "slaves of the sultan of Ghor." In 1398 the city was desolated by Tamerlane, and in 1526 it was seized by Baber, the founder of the long line of Mogul emperors. With the changes of the sceptre the empire alternately waxed and waned, at one time (1340) embracing almost the whole peninsula, at another (1398) restricted to a few miles around the capital. Under the Moguls it recovered more than half its former possessions. Akbar removed the throne to Agra, but Shah Jehan in 1631 built the present city close to old Delhi, and made it the royal residence. The Mohammedans still call it Shahjehanabad, the "city of the king of the world." Nadir Shah, the Persian usurper, captured it in 1739, massacred thousands of the inhabitants who had rashly attacked his troops, and bore away plunder to the value of nearly $100,000,000, including the famous peacock throne and the great koh-i-noor diamond, now in the possession of the British crown. From this time dismemberment rapidly went on. The Great Mogul lost all but the shadow of sovereignty, and at last fell into the hands of the Mahrattas, who were defeated near Delhi in September, 1803, by the British under Lord Lake. The titular emperor was released from captivity, a pension of £100,000 a year was assigned him, a resident was appointed at his court, and the British exercised the government in his name. In 1827 the empty show of power was taken from him, £50,000 being added to his allowance; and though still revered by Mohammedans as the descendant of Timour, his sway was thenceforth confined to the 12,000 members of his family who filled his palace and swallowed up his pension. When the sepoy mutiny broke out in 1857, Shah Mohammed Bahadour, then 90 years old, took command of the city, appointed officers, and resumed the imperial state to which he had long been a stranger. The British lost no time in preparing for the reconquest of a city on which the fate of India was thought to hang. A force arrived before Delhi June 8, but for many weeks was not strong enough to risk an assault; and it was not till September that a general attack was made. The army then numbered about 10,000 men. The siege guns opened fire on the 11th, and on the 14th, a breach having been effected, the assault was ordered. Several positions were carried, but it was not until the 20th that the entire city was secured. The insurgents fled, and with them the king, who took refuge in the suburban palace near the Cuttub Minar, where he surrendered the next day on promise of his life. He was subsequently tried for participation in the mutiny; his nominal sovereignty was declared extinguished, and he himself sentenced to transportation for life. A large part of the city was reduced to ruins during the siege, but it has since almost entirely recovered its former importance.

DELILLE, Jacques, a French poet, born at Aigue-Perse, Auvergne, June 22, 1738, died in Paris, May 1, 1813. He was a natural son of a lawyer named Montanier, became known in 1769 by his translation of Virgil's Georgics, and in 1774 became a member of the academy, and soon afterward professor of Latin poetry in the collége de France. In 1782, on the publication of his original poem, *Les jardins*, he was presented through the favor of the count d'Artois with an abbey, with a yearly income of 30,000 livres. He was arrested during the reign of terror, but saved by the interposition of Chaumette. For the celebration of the *fête de l'être suprême* he wrote, at the request of Robespierre, an ode on the immortality of the soul. His subsequent works were translations of the Æneid and "Paradise Lost," and several didactic poems, among them *La pitié*, descriptive of suffering and heroism during the reign of terror. His later years, during which he became blind, were spent quietly at Nanterre. The most complete edition of his works is in 16 vols. 8vo (1824–'5). An edition in one volume was published in 1833.

DELINIERS, Jacques Antoine Marie, viceroy of Buenos Ayres, born at Niort in France, Feb. 6, 1756, shot at Buenos Ayres in 1810. He entered the Spanish navy, attained the rank of captain, and during the war with Great Britain was sent on a mission to South America. On the capture of Montevideo in June, 1806, by the English under Beresford, Deliniers, being then at Buenos Ayres, collected a force and marched against the conquerors, whom he compelled to capitulate (Aug. 12). For this exploit, in accordance with the wish of the people, he was made viceroy of Buenos Ayres. Montevideo was, however, recaptured by the British, under Auchmuty, Feb. 3, 1807. Soon after Deliniers was attacked by the English in the vicinity of Buenos Ayres, and driven within its walls. The English immediately besieged it, but were finally obliged to retire with great loss. Deliniers shortly afterward compelled them to engage to abandon Montevideo and the whole country of the Plata within two months. Afterward espousing the royal cause, he was driven from the city by the party of independence; but he had recovered his power when a new viceroy, Don Balthasar de Cisneros, was sent out from Spain to replace him. Deliniers received the title of count of Buenos Ayres, and was ordered to return to Europe, but retired to Mendoza. His deposition produced a revolution which compelled Cisneros to abdicate; but when Deliniers with 2,000 men attempted to reëstablish the royal authority, he was defeated and captured by the revolutionists, and shot with several others.

DELIRIUM TREMENS, Delirium Ebriositatis, or **Mania a Potu,** a disease caused by the abuse of spirituous liquors, and characterized by tremor, sleeplessness, and delirium. An essential character is cerebral debility caused by exhaustion from over-stimulation. It is remarkable

that a disease so well marked and so easily recognized as delirium tremens should up to the early part of the present century have been confounded with inflammation of the membranes of the brain, and that, thus misled by a name, most physicians bled, blistered, and mercurialized their patients, thus adding vastly to the mortality of a complaint already sufficiently fatal. Delirium tremens sometimes makes its appearance in consequence of a single debauch; commonly it is the result of protracted or long continued intemperance. Occasionally, where the indulgence is very excessive, the attack occurs while the patient still continues his potations; more generally it is the result of some cause by which they are temporarily interrupted; the patient's stomach gives out, and refuses the accustomed draught, he receives a hurt, or he is affected by some of the ordinary causes of illness. He is now nervous, uneasy, and restless; he is startled by any sudden noise, as the opening of a door or the entrance of a visitor; the hands and tongue are tremulous; he complains of inability to sleep, and if he dozes for a moment he is awakened by frightful dreams; with all this, his skin is commonly cool and soft, his pulse slow, and his tongue moist. Soon delirium manifests itself; if questioned the patient often answers rightly enough, but if left to himself he begins to talk or mutter; he imagines himself surrounded by frightful or loathsome animals; he is pursued by some one who has a design upon his life; he has terrible and ghastly visions. Though most commonly of a frightful or terrifying character, the delirium is not invariably so; occasionally the appearances are droll or ludicrous, and the patient seems amused by them. He is rarely dangerous; his predominant emotion is fear; but in the effort to escape an imaginary enemy, he may commit a murderous assault, or more probably take his own life. The delirium continues until he dies exhausted, or sinks into a sleep from which he awakes comparatively rational. When the strength of the patient has not been seriously impaired by long continued excesses, delirium tremens is rarely fatal; but those whose constitutions have been thus broken down frequently succumb. In such cases death is often sudden; the patient rises for some trivial purpose, and falls into a faint from which he never recovers. At other times, after passing many nights without sleep, he sinks into a state of coma, which terminates in death. The same habits which cause repeated attacks of delirium cause likewise organic affections of the viscera, more particularly of the liver and kidneys, and these seriously influence the result of each new attack.—*Treatment.* In severe cases, opium is the article which has been mainly relied on by practitioners, and in most instances it will not disappoint their expectations; still there is a class of cases rebellious to its influence, whatever dose may be given, and in these the inhalation of chloroform has sometimes been effectively employed. Lately the hydrate of chloral has been used to keep the patient quiet while his system is being built up by the administration of nourishing and easily digested food, which should be held in view as the main point in the treatment, the medicine being used more to keep the patient within control than for any certain effect. Alcoholic stimulants, in the form of wine, ale, and sometimes distilled liquors, are also generally of service, and are sometimes indispensable. Dr. Daw in the "British Medical Journal" for May, 1873, recommends the use of hydrocyanic acid in place of opium and other narcotics. His method is to combine it with bicarbonate of potash, chloric ether, and camphor, in doses of two or three minims of the officinal solution every two, three, or four hours.

DELISLE. See LISLE.

DELITZSCH, a town of Prussia, in the province of Saxony, on the Lober, 17 m. N. E. of Merseburg and 12 m. N. by W. of Leipsic; pop. in 1871, 8,112. It contains a castle, three churches, a hospital, and manufactories of hosiery, gloves, shoes, and tobacco. The town is old, and has several annual fairs.

DELITZSCH, Franz, a German theologian, born in Leipsic, Feb. 23, 1813. He studied at the university of his native city, and in 1846 was appointed professor of theology at Rostock. He removed in 1850 to Erlangen, where he became one of the strongest representatives of the so-called Erlangen school, which is an exponent of the strictest orthodox theology. His earliest publications were mostly studies in oriental philology, including *Geschichte der jüdischen Poesie* (Leipsic, 1836), and *Jesurun* (1838). He devoted himself subsequently to exegesis, and published *Habakuk* (Leipsic, 1843), *Das Hohelied* (1851), *Die Genesis* (1852), *Die Briefe an die Hebräer* (1857), and *Hiob* (1864). His dogmatical work *Das Sakrament des wahren Leibes und Blutes Jesu Christi* (1844), and his *System der biblischen Psychologie* (1855), have passed through numerous editions. His *Handschriftliche Funde* (1861–'2) contains valuable critical remarks on the text of the Apocalypse. Since 1863 he has been engaged with Keil in preparing a complete commentary on the Old Testament; several volumes have appeared, and, like most of his works, have been translated and republished in Edinburgh. His latest production is *Studien über indo-germanisch-semitische Wurzelverwandschaft* (1873).

DELIUS, Nikolaus, a German scholar, born in Bremen in September, 1813. He graduated at Bonn, qualified himself for a professorship in Berlin, and has been since 1855 professor of Sanskrit and of Provençal and English literature at Bonn. He has published a critical edition of Shakespeare's works (7 vols. and supplements, Elberfeld, 1854–'65), and other works relating to the English dramatists and to Provençal poetry.

DEL NORTE, the N. W. county of California, bordering on Oregon and the Pacific

ocean; area, 1,440 sq. m.; pop. in 1870, 2,022, of whom 217 were Chinese. The Klamath river forms a part of the S. border, and also intersects the E. part. A great part of the surface is mountainous. Forests are abundant, but the chief wealth is mineral. Gold is found on the Klamath and branches, and in the sands of the seashore, and copper in the mountains. The chief productions in 1870 were 7,423 bushels of wheat, 14,955 of oats, 2,550 of barley, 20,495 of potatoes, 869 tons of hay, and 35,853 lbs. of butter. The total value of live stock was $65,888. Capital, Crescent City.

DELOLME, Jean Louis, a Swiss author, born in the city of Geneva in 1740, died in the canton of Schwytz, July 16, 1806. Having published a pamphlet which gave umbrage to the authorities of his native city, in which he had been established as a lawyer, Delolme repaired to England, where he became an earnest student of British institutions. He was the author of various works and essays on political affairs, but his fame rests upon his great work, *Constitution de l'Angleterre, ou état du gouvernement anglais comparé avec la forme républicaine et avec les autres monarchies de l'Europe.* First published at Amsterdam in 1771, it met with a favorable reception, which induced Delolme to enlarge and improve it, and to publish a new edition in English, which appeared in 1772, and was several times republished. An edition with life and notes by J. Macgregor, M. P., was published in 1853. Delolme wrote several other works in English. He was finally reduced to great poverty.

DE LONG, George W. See supplement.

DELORME, Marion, a French courtesan, born near Châlons-sur-Marne about 1612, died in Paris in 1650. She was the daughter of a tradesman, and received little if any education. Endowed with extraordinary personal attractions, and with intelligence and wit equalled only by the recklessness and frivolity of her disposition, she captivated as soon as she came to Paris the hearts of many of the most brilliant gentlemen of the French court. Among her most devoted admirers was the marquis de Cinq-Mars, who was on the point of marrying her privately in order to put an end to the attentions paid to her by Richelieu, when this occasion is said to have suggested to the cardinal his law prohibiting secret marriages, the effect of which was to separate the lovers and to make Marion yield herself to the powerful minister. Her house soon became a centre for the most distinguished people. She shared her empire with Ninon de l'Enclos, who, however, was greatly her superior in mental culture, and who survived her half a century. Her favors were extended successively or simultaneously to the learned Saint-Évremond, the brilliant duke of Buckingham, and many other more or less eminent men. During the minority of Louis XIV. she took an active interest in the movements of the Fronde. Her social circle, once the fashionable resort of the wits and roués of Paris, now became a focus of politicians and conspirators. In June, 1650, Mazarin ordered her arrest, but she died just before the officers came to take her to prison. Reports of her having only simulated death, to make good her escape, and other romantic stories in regard to her, were rife at the time, and have since been repeated, although they are not authenticated by facts.

DELOS, or **Delus** (now *Dili* or *Sdilli*), an island of the Grecian archipelago, one of the smallest in the group of the Cyclades, in lat. 37° 23′ N., lon. 25° 17′ E. It is little more than 5 m. in circumference, and consists for the most part of barren rock, culminating in Mt. Cynthus, about 400 ft. high. At the foot of this are the ruins of the ancient town of Delos. The only present inhabitants are a few shepherds, and even these do not spend the entire year in the island.—With the ancients the island derived great importance from the religious beliefs connected with it. It was also called Ortygia, Cynthia, and sometimes Asteria, and still other names are occasionally found. The ancient legend, probably alluding to its origin from a volcanic eruption, represents it as having risen from the sea at a stroke of Neptune's trident and floated until it was moored to the bottom with adamantine chains by Jupiter, in order that it might become a place of refuge for Latona, who was delivered there, on a desert rock and under a shady tree, of Apollo and Diana, hence called Delius and Delia. To them, but especially to Apollo, the island was sacred; and in accordance with a vow of Latona a temple was erected by Erysichthon, son of Cecrops, at the foot of Mount Cynthus, which in due time was enriched by the gifts of nations, and remained unshaken by the earthquakes that often desolated neighboring islands. The oracle of Apollo, who gave responses here in summer, and at Patara in Lycia in winter, was regarded as the most distinct and trustworthy. Delian festivals were held here every four years; the Athenians sent yearly an embassy with choruses and dances. Latona had also her temple. Delos was colonized by the Ionians, became the centre of splendid festivals in honor of Apollo, and was ruled by kings, who at the same time performed the functions of priests. In later times it became dependent upon the Athenians, who performed there two purifications, first under Pisistratus, and secondly in the sixth year of the Peloponnesian war (426 B. C., as described in the third book of Thucydides), by removing the tombs and dead bodies to a neighboring island, and who also enacted a law to guard the sacred grounds from the pollution of births and deaths. Its towns, having no walls, were guarded by their sanctity; its temple and immense treasures were untouched by the Persians in their invasion; and during the following wars it became the seat of the common treasury of the Grecian states. When this was removed to Athens, Delos decayed,

but was still remarkable for commerce; and after the destruction of Corinth by the Romans (146 B. C.), it was the chief emporium of the slave trade, and a flourishing seat of art. The city and temple were plundered and destroyed by Menophanes, general of Mithridates, king of Pontus, and the women and children sent as slaves to Asia. At a later period the remains of the splendid ancient buildings were carried away by Venetians and Byzantines; but interesting ruins still exist.

DELPECH, Jacques Mathieu, a French surgeon, born in Toulouse about 1775, murdered in Montpellier, Oct. 29, 1832. In 1793 he joined the army of the Pyrenees as an assistant in the medical corps, and after five years' service returned to Toulouse, where he was attached to the surgical service of the hospital St. Jacques. He finished his education at the medical school of Montpellier in 1802, and soon after took up his residence in Paris, where he acted as surgical assistant to Baron Boyer. In 1812 he was appointed professor of clinical surgery at the school of Montpellier, where he continued for the remainder of his life. He was assassinated in the street by a man who immediately afterward committed suicide, and whose motive was never certainly known. Delpech was distinguished alike for skill as a practitioner, especially in the treatment of deformities, eloquence and clearness as a lecturer, and generosity. His most important works were: *Réflexions sur la cause de l'anévrysme spontané* (Paris, 1813); *Mémoire sur la complication des plaies et des ulcères connue sous le nom de pourriture d'hôpital* (1815); *Précis élémentaires des maladies réputées chirurgicales* (3 vols. 8vo, 1816); *Chirurgie clinique de Montpellier* (2 vols., 1823–'8); *De l'orthomorphie par rapport à l'espèce humaine* (2 vols., 1828–'9); and *Mémorial des hôpitaux du Midi et de la clinique de Montpellier* (a monthly journal, 1829–'31).

DELPHI (Gr. Δελφοί), a town of ancient Greece, deriving its importance from its oracle of Apollo, the most famous in the ancient world. It was situated in the S. W. part of Phocis, in a narrow valley, on the river Plistus, at the foot of Mount Parnassus. The remains of the modern village of Castri, almost entirely destroyed by an earthquake in 1870, now occupy a portion of its site. The oracle was the nucleus around which the town grew up. According to the legends, Apollo long searched for a spot on which to found a temple, and at last came to the valley at the foot of Mount Parnassus, which so charmed him that after he had slain a huge serpent which inhabited the place, he established his worship there. From the serpent's rotting (Gr. πύθειν, to rot) in the ground, the Homeric hymn to Apollo ingeniously derives the name Pytho by which the temple was first known. To obtain priests for his worship, Apollo now changed himself into a dolphin, and conducted into the Crissæan gulf a Cretan vessel which was on its way to Cnossus; the crew became his priests and worshipped him under the name of Apollo Delphinius (Gr. δελφίς, a dolphin, whence also the name Delphi). From the antiquity of these legends, which are themselves probably mere attempts to explain the names, it appears that the worship of Apollo was in some way established in this valley in the very earliest times. At the period of the Homeric poems a magnificent temple already stood there, said to have been built by the architects Agamedes and his brother Trophonius, who however were doubtless mythical characters. A city had also sprung up about the shrine of the god. In the earliest times this was subject to the neighboring town of Crissa, and afterward to that city's rapidly increasing seaport of Cirrha, in which crowds of pilgrims landed on their way to the oracle, so enriching the harbor town that it rapidly gained a lasting superiority over Crissa. About the year 598 B. C. complaints arose that the people of Cirrha treated the pilgrims on their way to Delphi unjustly; and the amphictyonic league, comprising representatives of the countries of Greece, rose to avenge the alleged insult to Apollo. In this war, called the first sacred war (595 to 585), they defeated and destroyed Crissa, and solemnly dedicated its lands and the territory about it to the Delphic god. A portion was set apart for the Pythian games, which after this time were celebrated with great magnificence. Every matter of profane or ordinary usage was excluded under the gravest penalties from the sacred ground. (See AMPHICTYONS.) In 548 the temple was burned, and money was at once subscribed throughout Greece to rebuild it. The family of the Alcmæonids, at that time under sentence of banishment from Athens, contracted to accomplish this for 300 talents, and gained the greatest popularity by far exceeding the terms of their contract, and by erecting mainly at their own cost a much more magnificent building than had been contemplated. Spintharus of Corinth was the architect. The front of the temple was of Parian marble, and the whole was decorated with the most costly and beautiful ornamentation. In spite of the immense wealth accumulated in Delphi, from gifts and votive offerings pouring in constantly from all parts of Greece and even from other countries, the sacred character of the place protected it from plunderers for two centuries. The army of Xerxes, sent to sack it on that monarch's invasion (480), were, according to the legend, driven back in panic by the miraculous interference of Apollo. In 357, however, the Phocians themselves, having been found guilty by the amphictyonic council of an act of sacrilege, and condemned to pay an enormous fine, rebelled against the sentence and seized Delphi. In the war which followed to compel them to surrender it, they robbed the treasury of the temple to pay the expenses of their defence. Through the interference of Philip of Macedon the sacred city

was restored to the custody of the amphictyons, and the Phocians were condemned to reëstablish the splendor of the dismantled temple, which, however, they were too poor to do properly. In 279 Brennus and the Gauls planned the plunder of Delphi, but they also were said to have been driven back by a miracle. The temple was plundered by Sulla, and again by Nero, who silenced the oracle. Hadrian restored it, and in his reign Delphi enjoyed the greatest prosperity, its temple and other buildings being again decorated and enriched with their former magnificence. Constantine plundered the temple of some valuable works of art; but the oracle continued to flourish until Theodosius finally abolished it.—The ancient city of Delphi was built in the form of an amphitheatre on the S. W. side of Mount Parnassus, and extended into the valley across the



Site of Delphi.

Plistus. At the time of the visit of Pausanias, to whom we owe our best description of it, the general arrangement of its principal features was probably as follows: The temple and the buildings connected with the worship of Apollo were set apart within a sacred enclosure. Entering this by the eastern gate, and passing by the almost innumerable statues erected as offerings to the god, the visitor next came to the *thesauri* or treasuries, small buildings standing about a stone called the stone of the sibyl. The neighboring stoa, built by the Athenians, also served as a repository for the riches of the temple. The great altar of Apollo stood in the open air before the principal edifice. The temple appears to have been a hexastyle, the exterior Doric, the interior Ionic. Its dimensions were about 195 ft. by 82. The exterior was elaborately adorned with sculptures. The divisions of the interior were the pronaon, with walls inscribed with sayings of the seven wise men of Greece; the cella, where a perpetual fire burned on the hearth, and where was placed the *omphalos* or navel stone, supposed to mark the centre of the earth; and the adytum, where the oracles were delivered. This last division is supposed to have been in part, if not wholly, underground. Within it, and over a deep chasm from which issued a peculiar mephitic vapor, stood a tripod, upon which sat the Pythia, or priestess of the oracle, when she delivered its revelations. Preparing herself by chewing the leaves of the laurel, she was placed upon the tripod, where, inspired by the god, as was believed, and probably affected by the vapor from the chasm, she fell into a violent convulsive ecstasy, uttering groans and confused sounds, with disconnected words. These were carefully noted by the attending priests, and rendered into metrical forms as revelations from Apollo. In the earliest times the Pythia was a young girl; afterward only women over 50 were selected for the office. They must be natives of Delphi, and were bound to absolute chastity. Of the theatre little is known; and the only other noteworthy objects within the enclosure were the *bouleuterion* or council house of the Delphians, which stood near the Athenian stoa, and a great many monuments of various kinds. Outside the enclosure, opposite the eastern gate, was the Castalian fountain, the sacred spring in which all who visited Delphi for a religious purpose were obliged to purify themselves. Other temples and buildings in Delphi were the temple of Athena Pronæa, the sanctuary of Phylacus, and the gymnasium.—With regard to the ruins at Castri, and the more complete topography of the city, see Leake's "Northern Greece" (London, 1835 and 1841), and Ulrich's *Reisen und Forschungen in Griechenland* (Bremen, 1840).

DELPHIN CLASSICS, the name of a celebrated edition of the Latin classics, prepared in the reign of Louis XIV., by 39 scholars, for the use of the dauphin (*in usum Delphini*).

DELPHINIUM, the name of an extensive genus of annual or perennial herbaceous plants belonging to the natural order of *ranunculaceæ*. They have handsome irregular flowers, resembling somewhat the fanciful figures of the dolphin or the spurs of larks, and are commonly known as larkspurs. The genus is nearly allied to the aconites. The seeds, especially of *D. staphisagria* (stavesacre) and *D. consolida* (branching larkspur), are powerfully cathartic, and owing to the violence of their operation are seldom given internally; they are, however, employed in destroying vermin. The

extract (*delphinia*) has been used in tic douloureux, paralysis, and rheumatism. The blossoms of the delphiniums are very showy, and in some sorts they are even extremely rich and magnificent. Those known as the rocket larkspurs have elegantly colored flowers, though they are apt to exhibit too light and less showy tints. The double kinds of these are very attractive in early summer. Their seeds are sown in finely pulverized and rich soil in autumn, either in beds, in patches, or in single rows, as fancy or taste may dictate. If allowed to stand too close together, the flower spikes are not so well developed. Sometimes they are used to succeed the blooming of hyacinths, and are accordingly sown in or near hyacinth beds. The interstices of tulip beds are sometimes sown with them in the same way; and thus the period of the fading of the flowers of the bulbs is enlivened by the spikes



Delphinium staphisagria.

of the larkspurs bearing their hyacinth-like blooms. The few weeks previous to the proper time for taking up the bulbs exhaust the beauty of the larkspurs, so that they can be removed together. The perennial delphiniums are conspicuous for size and altitude. They vary, however, in both these particulars. Some grow from 5 to 6 ft. high in a few weeks, having spikes of coarse blue or pale blue flowers. Others are more supine, have weaker flower stems, and a more divided and more graceful and delicate foliage. The blossoms of such are proportionably more beautiful, varying from the intensest blue or azure to a paler color, and so shading off by degrees to a pearly or opalescent tint. Cultivation has produced many extraordinary and double sorts, of which the *D. grandiflorum*, or Chinese, as it is sometimes called, and Buck's seedling are among the finest. These perennials are, however, herbaceous, all dying down to the root and rising again with strong shoots in the next year. From a singular resemblance of the inner petals, especially in the single flowers, to the body of a bee, they have been called bee larkspurs, the pubescence accompanying them helping the illusion by its seeming to be hairs. The species native in the United States



Delphinium ajacis.



Delphinium elatum.

are *D. exaltatum* (Mx.), with a stem from 2 to 5 ft. high and purplish blue flowers, occurring in Pennsylvania; *D. tricorne* (Mx.), a pretty species of a foot high, seen in Ohio; and *D. azureum* (Mx.), a characteristic species in Iowa and Minnesota. One other has been naturalized, *D. consolida* (Linn.), having escaped from grain fields and appearing on the sides of the roads, like many other foreign species introduced by seeds from abroad, either for the garden or in field husbandry. A splendid scarlet-flowered delphinium was discovered by Dr. Parry in 1850, on the mountains east of San Diego; it is *D. coccineum* (Torrey, in "Mexican Boundary Survey"). Another scarlet-flowered species is known as *D. nudicante*.

DELTA. **I.** A N. E. county of Texas, formed since the census of 1870 from portions of Fannin, Hopkins, and Hunt counties, lying between the N. and S. forks of Sulphur river; area, about 250 sq. m. The surface is partly prairie and partly timber land. The soil is good, and produces cotton, corn, and other grain. Capital, Cooper. **II.** A S. W. county of the upper peninsula of Michigan, washed by Lake Michigan and by Green bay; area, about 1,500 sq. m.; pop. in 1870, 2,542. Big bay and Little bay des Noquets indent it, and it is intersected by several streams which fall into those bays. It has a hilly, well wooded surface, and contains abundance of limestone and sandstone. The Peninsula division of the Chicago and Northwestern railroad crosses it. The total value of farm productions in 1870

was $11,163, of live stock $7,540. There were 1 saw mill and 1 manufactory of pig iron. Capital, Escanaba.

DELUC. I. Jean André, a Swiss physicist, born in Geneva, Feb. 8, 1727, died at Windsor, England, Nov. 7, 1817. He received an excellent education, and spent the first half of his life in commercial pursuits. During his numerous journeys of business he made, with the assistance of his brother Guillaume Antoine, a fine collection of objects of natural history. About 1773, obliged by commercial misfortune to leave his native city, he went to England, was elected a fellow of the royal society of London, and was appointed reader to the queen, which situation he held till his death. In the latter part of his life he made several tours in central Europe, passing six years in Germany, and after his return in 1806 made a geological tour in England. He received at Göttingen the appointment of honorary professor of geology. His principal writings treat of geology and meteorology; his first important work was *Recherches sur les modifications de l'atmosphère* (2 vols. 8vo, Geneva, 1772), which contains many valuable suggestions on the practical applications of barometers, thermometers, and hygrometers. He substituted mercury for spirits of wine in Réaumur's thermometer, and invented a portable barometer, establishing correct rules for determining by this instrument the height of mountains and the depth of mines. Other papers on subjects connected with meteorology are scattered through the "Philosophical Transactions" from 1771 to 1792. Religious fervor is manifest in all his works, contrasting strikingly with the prevailing spirit of the age. His *Lettres physiques et morales sur l'histoire de la terre* (6 vols. 8vo, the Hague, 1778–'80) treat particularly of the comparatively recent origin of the present continents and their mountains, and the difficulty of carrying back this origin to a period more remote than that assigned by the Mosaic chronology to the flood. His reverence for the Bible led him to attempt to explain all apparent contradictions between geological phenomena and the Mosaic account of creation. Though his conclusions are not now admitted in geology, he extended the limits of this science. In his "Elementary Treatise on Geology" (8vo, London, 1809), he opposes the system of Hutton and Playfair, which attributes the changes in the earth's structure to the action of fire. Cuvier ranks him among the first geologists of his age. He contributed many papers to the *Journal de Physique*, the *Journal des Mines*, and the "Philosophical Magazine." He separated the chemical from the electrical effects of the voltaic pile, and constructed an ingenious but incomplete instrument, the dry electric column, for measuring the electricity of the air. He published also several volumes of his geological travels in England and northern and central Europe, and works on the Baconian philosophy, on the religious education of children, and on Christianity. **II. Guillaume Antoine,** brother of the preceding, born in 1729, died in Geneva, Jan. 26, 1812. He travelled extensively, and at Vesuvius and Etna in 1756–'7 made fine collections of volcanic products, fossil shells, and other objects of natural history. His papers on mineralogy and geology may be found in the *Journal de Physique*, 1798–1804; *Bibliothèque Britannique*, 1801; and *Mercure de France*, 1806–'7.

DELUGE (Fr. *déluge*, from Lat. *diluvium*), a great flood of water covering the land; but the words "the deluge" usually designate the Noachian flood of the Scriptures. The history of this event, of its causes and immediate consequences, is contained in Genesis vi.–ix. According to the chronology of the authorized English version of the Scriptures, it occurred in the year 2349 B. C., or in the year 1656 after the creation. Traditions agreeing in a greater or less degree with the Scriptural narrative have been found among almost every known people of the earth. Among the most remarkable are the tradition of the Chaldeans, recorded by Berosus and quoted by Josephus and other writers. It agrees with the Mosaic account in representing a race of giants as inhabiting the earth before the flood, which was sent as a punishment for their wickedness. Abydenus, a later historian than Berosus, using him as authority, recounts the same tradition. He mentions the sending out of birds from the ark and their return with mud upon their feet. Both writers state that the ark still existed in the mountains of Armenia, and Abydenus says the people converted pieces of it into bracelets and amulets. The Hindoo tradition represents the god Vishnu as warning the prince Satyavarata, and furnishing him with a large vessel in which he and seven Nishis and their wives were saved. The sacred books of the Persians also record a universal deluge sent upon mankind for the corruption introduced by Ahriman, the evil spirit. The Greeks had a similar tradition of a universal deluge, the only survivors of which were Deucalion and his wife Pyrrha. (See Deucalion.) The Chinese, the Mexicans, the Peruvians, and even the Feejee islanders have a similar tradition. But each of these traditions makes the country where it exists the scene of the deluge, and the details are always accommodated to the thoughts and habits of the people and to the physical characteristics of the country. These traditions were formerly regarded as strongly corroborating the Scriptural account, but of late years the tendency has been to consider them of minor importance. The interest in the subject has, however, been recently renewed by the discovery, by Mr. George Smith of the British museum, of several mutilated clay tablets on which is inscribed in cuneiform characters an ancient Chaldean tradition of the deluge. (See Cuneiform Inscriptions.) These tablets are unfortunately much mutilated

in precisely those places where curiosity is most excited. For example, they describe the building of a ship, but the numbers which originally stated its dimensions are wanting. The tablets were made in the time of Asshur-bani-pal, about 660 B. C., but they profess to be copies of a much older document, which Mr. Smith refers to a period not later than the 17th century B. C., and it may be of a still earlier date. The agreement between this tradition and the Scriptural history is, however, very slight. It is the tradition of a polytheistic people, and many gods are mentioned by name. The principal man in the tradition, corresponding to the Noah of Scripture, is called Sisit, the son of Ubaratutu. One of the gods warned him of the coming destruction, commanding him to build a ship and "to cause to go in the seed of life, all of it." Sisit obeyed, and took into the ship his silver, his gold, and "all he possessed of the seed of life, all his male and female servants, the beasts of the field, and the sons of the army." The flood came and increased until the seventh day, when it began to abate, and the ship rested on the side of a mountain called Nigir. After seven days more Sisit sent out a dove, which returned; then a swallow, which also returned; and lastly a raven, which fed upon the corpses floating on the water, wandered off, and did not return. Sisit now came out of his ship, released the animals, built an altar on the peak of a mountain, and sacrificed to the gods, who collected around the sacrifice. From this point the narrative consists of a strange mythological medley, bearing no resemblance to the Scripture history. Mr. Smith says: "In spite of a striking similarity in style, which shows itself in several places, the two narratives belong to totally distinct peoples." But the interest in this tradition, which is that of a people whose history was intimately connected with that of the Hebrews, is increased by the fact that the material document itself can be seen and read, and its antiquity far surpasses that of any known record relating to the subject, the oldest manuscripts of the Scriptures being comparatively recent.—The interpretation of the Scriptural account of the deluge has been during the last and the present century a subject of much discussion by theological writers. The principal question involved, and the one which virtually includes all the others, is, Was the deluge universal? Our limits will not permit even a summary of the various arguments advanced by the numerous writers who have endeavored to answer this question. The Bible says that "all the high hills which were under the whole heaven were covered." But the facts of astronomy, geology, and natural history are irreconcilable with the supposition of a universal deluge, unless it be accompanied with the supposition of a series of the most stupendous miracles. Accordingly, the opinion which appears to be entertained by the majority of Biblical critics is that the human race at the time of the deluge occupied but a small portion of the earth's surface, lying mostly in the basin of the Euphrates and Tigris, that the deluge was confined to that region, and that the Scriptural expression above quoted is to be taken in a limited signification. Such is the opinion of Nägelsbach in Herzog's *Real-Encyklopädie*, of Dr. Edward Hitchcock in the "Biblical Repository," of Prof. Tayler Lewis in an *excursus* in the English translation of Lange's "Commentary on Genesis," of Mr. J. J. S. Perowne in Smith's "Dictionary of the Bible," of Dr. James Strong in the "Cyclopædia of Biblical, Theological, and Ecclesiastical Literature," and many others. According to Swedenborg, the narrative of a deluge in Genesis refers entirely to a deluge of evils and falsities which overwhelmed the church in ancient times, the account of which by the ancient writers was purely symbolical, and not intended to be understood literally as a deluge of water.

DEMADES, an Athenian statesman and orator, executed in 318 B. C. He was of low origin, and was supposed to have been a sailor in his youth; but by great talent and unscrupulous demagogism he raised himself to a prominent position at Athens. He belonged to the pro-Macedonian or peace party, and was the virulent opponent of Demosthenes. He fought, however, at Chæronea in defence of Grecian liberty, and was taken prisoner, but Philip restored his freedom, and treated him with marked distinction. This won him still more to the Macedonian cause, and his behavior toward Philip and afterward toward Alexander was so servile as utterly to disgust his countrymen. They however induced him to use his influence to obtain favorable terms for his native city. When, after the destruction of Thebes, Alexander demanded the surrender of Demosthenes, Demades, bribed by the friends of the latter, interceded with the king. Afterward, when Demosthenes and his friends left the city on the approach of Antipater and Craterus, he induced the people to pronounce sentence of death against them. Having been sent as ambassador to Antipater, he was put to death by that general on the discovery of letters in which he urged the enemies of Antipater to attack him. Demades was a great wit, and excelled as an extemporaneous orator. Cicero and Quintilian both assert that he left no written orations.

DEMAVEND, Mount, the highest summit of the Elburz mountains in Persia, between the provinces of Irak-Ajemi and Mazanderan, lat. 35° 50′ N., lon. 52° E. It is an extinct volcano, conical in shape, and about 18,000 ft. high. It yields large quantities of pumice stone and pure sulphur, and around its base are several hot springs.

DEMBEA, Lake. See TZANA.

DEMBINSKI, Henryk, a Polish general, born in the palatinate of Cracow, Jan. 16, 1791, died in Paris, June 13, 1864. His father, a

zealous adherent of the anti-Russian party and of the liberal constitution of May 3, 1791, urged his sons in his will to defend the same principles; and their mother educated them accordingly. Henryk studied at the Vienna academy of engineers, and left it in 1809, refusing to accept a commission from the Austrian government, and enlisted as a private in the Polish army. He became a lieutenant at the opening of the campaign against Russia in 1812, was made captain by Napoleon at Smolensk, and distinguished himself in the battle of Leipsic. After the fall of the French empire he returned to Poland. In 1825 he was elected to the Polish diet, where he acted with the opposition. After the outbreak of the revolution at Warsaw in November, 1830, he was intrusted with the command of the mobile national guard of his native palatinate, marched with his troops to the capital in February, 1831, received from Skrzynecki the command of a cavalry brigade, fought bravely at Dembe, Liw, and Kuflew, and on the banks of the Narew, where he repulsed the Russians. He was next attached to the unsuccessful expedition to Lithuania, and alone led his detachment through the marshes and forests back to the capital, where he was received with great enthusiasm by the people, and with public thanks by the diet. Made governor of Warsaw, he was also for a few days successor of Skrzynecki in the chief command, but soon lost popularity. After the fall of Warsaw in September he followed Rybinski to Prussia, went thence to France, where he published his *Mémoires sur la campagne de Lithuanie* (Strasburg, 1832), and in 1833 to Egypt, to assist in the organization of the army of Mehemet Ali. He then returned to France, where he lived till 1848, when after the outbreak of February he went to Germany, and was present at the Slavic congress of Prague. He accepted a command in Hungary, passed through Germany and over the Austrian frontier, and made his appearance on the battle field in the camp of Perczel, Jan. 23, and received the chief command of the main Hungarian army on Feb. 5. The machinations of Görgey, however, hindered his plans and operations. He lost the battle of Kápolna against Windischgrätz and Schlick (Feb. 26, 27), and retreated beyond the Theiss. He was removed from the chief command on the complaint by several officers of their want of confidence in his abilities. On July 2 Dembinski received the virtual, and Mészáros the nominal command of all the Hungarian armies. Dembinski was defeated at Szöreg (Aug. 5), forced to give up the lines of the Theiss and Maros, and retreated toward Temesvár, and there lost (Aug. 9) the battle which sealed the fate of the revolution. He sought refuge with Kossuth in Turkey, whence he went to Paris, where he occupied himself in writing his "Memoirs of the Hungarian Campaign," which have not yet been published. A Polish pamphlet, entitled "A Glance at the Last Events of the Polish Revolution," was published by him in Paris in 1837.

DEMERARA, a river of British Guiana, which rises in about lat. 5° 12′ N., lon. 58° 38′ W., and flows almost due N. to Georgetown, where it falls into the Atlantic, after a course of 175 m., nearly parallel to that of the Essequibo. It is 2 m. wide at its mouth, where it forms a spacious harbor, the entrance to which is rendered difficult by a bar. It is navigable by large vessels about 100 m., but beyond that point is impeded by cataracts. Its affluents are small but numerous.

DEMERARA, a division of British Guiana. See Guiana.

DEMETER. See Ceres.

DEMETRIUS, Dimitri, or **Dmitri,** the name of several Russian princes, who reigned in the 13th, 14th, and 17th centuries. The most important of them is known under the name of Dimitri Samozvanetz, or Pseudo-Demetrius, and is generally believed to have falsely assumed the name of the younger surviving son of Ivan the Terrible, who during the reign of the elder son, the feeble Fedor, was confined by Boris Godunoff, the brother-in-law and ruler of the czar, in the town of Uglitch, and died there in 1591 a violent death, which was attributed by his mother to the treachery of Boris; but the latter instituted an investigation, from which it appeared that the child fell in a fit and was accidentally stabbed with a knife he held in his hand. The despotic rule of Boris, before and after the death of Fedor, the last of the Ruriks (1598), had prepared the minds of the Russians for a rebellion, when rumors of Demetrius having escaped the hands of the assassins by the substitution of another victim spread over the country. The pretender, whose real name and origin are still a mystery, made his first disclosures in 1603 at the court of Prince Adam Wisniowiecki in Lithuania, where he was serving in the capacity of a page. Prince Constantine Wisniowiecki, the brother of Adam, introduced him to his father-in-law, Mniszek, palatine of Sandomierz. Some of the Polish nobles and their friends were gained by the persuasive skill of the pretender, while Mniszek was fascinated by the prospect of seating upon the throne of Russia his daughter Maryna, for whom the youth declared his love. An audience of the king, Sigismund III., was easily gained, and, the interests of both the state and the Catholic church decisively pleading in favor of the cause, the nobles were allowed to set on foot an expedition to Moscow, independently of the government (1604). The future czar was zealously assisted by the Jesuits, and some historians therefore believe him to have been the tool of the order. A simultaneous revolt of the Russian Cossacks against the rule of Boris, under the lead of Grishka (Gregory) Otrepieff, a runaway monk, with whom Demetrius has often been confounded, seconded the enterprise. The invading army, about 5,000 strong, was re-

enforced in Russia by detachments of Cossacks. Some of the strongest cities, summoned in the name of the son of Ivan, voluntarily opened their gates; others were taken. After several victories and repulses, the war was terminated by the sudden death of Boris, and by the Russian commander declaring in favor of Demetrius. The latter captivated the people by a spectacular display of affection at his meeting with the mother of the prince he personated, who acknowledged him as her son. Boris's son and successor Fedor and his family were surprised in the Kremlin and thrown into prison, and the victor entered Moscow in triumph (June, 1605), and was crowned as Czar Demetrius. Fedor and his mother had been murdered, perhaps by his command; other members of the family also were made victims of his cruelty or policy, but a daughter of Boris was spared to become his concubine. His reign was marked from the beginning by energy and ability; but his love of innovations, his undisguised predilection for the culture, institutions, and religion of Poland, and his contempt of the customs, superstitions, and ignorance of his subjects, soon made him the object of national hatred. The arrival of his foreign spouse, with a large train of Polish nobles, warriors, and Jesuits, the arrogant and reckless behavior of some of these followers, and rumors of the czar's intended apostasy from the Russian church, finally undermined his throne. A few days after the celebration of his nuptials with Maryna, and her coronation, a band of conspirators, led by Prince Shuiski, who was indebted to Demetrius for the pardon of a former plot, assaulted the Kremlin. He defended himself bravely, but the people rising, he and thousands of his men, including nearly all the Poles, were butchered, May 16, 1606. Prince Shuiski was proclaimed czar under the name of Basil III., but, being attacked by a new pretender, also calling himself Demetrius, and by the Poles and Swedes, was obliged to resign his throne. The origin and previous history of the new Demetrius are unknown; his abilities were small, but his depredations made him an object of terror, and he even held the capital in siege for 17 months. Some of his men having captured Maryna, who had been released from prison to return to her country, the princess was compelled to acknowledge him as her lawful husband. But the pretender was soon after (1610) murdered by a Tartar chief of his guards, and the tzaritza perished, according to some, in the waters of the Ural, but according to others in prison. Even after the accession of the house of Romanoff to the throne of Moscow (1613), the convulsions caused by pretenders, one of whom called himself the son of the first of them, were but slowly suppressed. The history of the first *samozvanetz* has been poetically embellished by Bulgarin, Pushkin, and Khomiakoff, and made the subject of an unfinished drama by Schiller.—See *Les faux Démétrius*, by Prosper Mérimée (Paris, 1854).

DEMETRIUS PHALEREUS (so called from being a native of the deme of Phalerus), an Athenian orator and statesman, born about 345 B. C., died about 282. He studied under the philosopher Theophrastus, and began his political career in 325, as a champion of the democratic or anti-Macedonian party. This party being expelled from power, he went into exile, but was afterward reconciled with his former opponents; and when, in 317, Cassander of Macedon became virtually master of Athens, he made Demetrius governor, supported by a Macedonian garrison. He ruled Athens ten years with success, but perverted the revenues of the state to his personal use. His popularity was great, and the Athenians erected in his honor as many statues as their year contained days (360), but these were broken in 307. Condemned to death in his absence, he went to Thebes, and afterward to Egypt. He was well treated by Ptolemy I., but was banished to the upper part of the country by his successor, where he is said to have died of the bite of a snake. He composed writings on a large number of subjects, but none of them has come down to us, the book "On Elocution" attributed to him being spurious.

DEMETRIUS POLIORCETES (taker of cities, from Gr. *πολιορκεῖν*, to besiege), a king of Macedonia, born about 338 B. C., died in 283. He was the son of Antigonus, who in the first division of the Macedonian empire received several provinces of Asia Minor for his share. In the wars of his father against Eumenes and Ptolemy, Demetrius early exhibited valor and skill. Commanding in Syria, he was defeated by Ptolemy in the battle of Gaza (312 B. C.), but soon restored the balance of the war by a victory over one of his generals. A treaty of peace was concluded soon after, but was of short duration. More decisive were his services to his father in the expedition to Greece, the most important places of which had been occupied and garrisoned by Cassander, son of Antipater of Macedon. Sailing from Ephesus to Athens in 307, Demetrius entered without resistance the harbor of the Piræus with his fleet, which was mistaken for that of Egypt. Demetrius Phalereus, who had ruled Athens ten years in allegiance to Macedon, was compelled to retire to Thebes; Munychia and Megara, defended by garrisons in the interest of Cassander, were unable to withstand the besieger, and finally he triumphantly entered Athens. Having announced the restoration of the ancient democratic institutions, and promised distributions of corn and ship timber, he was received as god and saviour (*σωτήρ*) by the people. Summoned to the assistance of his father in his war against Ptolemy in Cyprus, he crossed over to that island, defeated the Egyptian fleet, and made himself master of all Cyprus; after which both he and his father assumed the title of king, and their example was followed by Ptolemy, Lysimachus, and Seleucus, the rival potentates of Egypt, Thrace, and

Syria. Demetrius, with his father, next undertook an invasion of Egypt by sea and land, which failed, their forces being repulsed with great loss. He next (305) besieged Rhodes for more than a year; but the Rhodians, aided by the allied enemies of his father, withstood bravely, and the siege was terminated by a treaty. Demetrius then sailed to Greece, compelled the Bœotians to relinquish their alliance with Macedon, expelled Cassander from Attica, and made himself master of Corinth, Argos, Sicyon, and most of the towns of Arcadia. In Athens the deified deliverer was received with the wonted honors, and resided as the guest of Minerva in the Parthenon, which he polluted by shameless debauchery. Again summoned to aid his father, he hastened to Asia, and fought in the great battle of Ipsus, in Phrygia (301), which ended in his defeat and the death of Antigonus, whose dominions were broken up, the greater part falling into the hands of Seleucus. Demetrius, embarking with the remnant of his army for Athens, met envoys from that city who announced that he would not be admitted. This defection was followed by the loss of his other possessions in Greece. He however gave Seleucus his daughter Stratonice in marriage, and made with him a treaty of alliance which stipulated that Demetrius should retain possession of Cilicia, Cyprus, and a part of the coast of Syria. He now armed for the reconquest of Greece, took Athens after a long resistance (295), and made a successful expedition into the Peloponnesus, when his attention was turned to Macedon. Antipater and Alexander, the surviving sons of Cassander, were engaged in a bloody struggle for the throne, and the latter invoked the aid of both Demetrius and Pyrrhus of Epirus. Pyrrhus appeared first and vanquished Antipater; Demetrius came after him, and deprived Alexander of both his throne and his life (294). Meanwhile his possessions in Asia were taken by Ptolemy and Seleucus. The following four years were occupied by two sieges of Thebes, an invasion of Thrace, and a war with Pyrrhus and the Ætolians, after the termination of which he was preparing for a new campaign in Asia when he was attacked (287) by a triple invasion from Thrace, Epirus, and Egypt. While marching against the Epirotes he was deserted by his Macedonian troops, who proclaimed Pyrrhus king. Demetrius escaped to his son Antigonus Gonatas, who had maintained possession of Greece, and saved a part of his dominion by a treaty with Pyrrhus. Leaving his son in Greece, he crossed over to Miletus, and fought his way as far as the northern mountain range of Syria, but was finally compelled to surrender to Seleucus, who confined him at Apamea in Syria till his death.

DEMETRIUS (I.) SOTER (Gr. Σωτήρ, saviour), king of Syria, born about 187 B. C., died in 150. He was the son of Seleucus Philopator, and grandson of Antiochus the Great. Sent as hostage to Rome by his father, he remained there during the whole reign of Antiochus Epiphanes, after whose death in 164 he besought the senate to release him and acknowledge him as king of Syria. This being refused, he escaped secretly from Rome, landed at Tripolis in Phœnicia, and was hailed as king by the Syrians. The young Antiochus V. and his tutor Lysias were put to death (162); and rich presents and ready subservience procured the acknowledgment of the new reign by the Romans. Delivering Babylon from a despotic governor, he received his surname of Soter from the gratitude of that city. In his war against the revolted Jews his lieutenant Nicanor was routed by Judas Maccabæus, who also concluded a treaty of alliance with the Romans against Demetrius. His interference in the affairs of Cappadocia still more alienated the senate of the republic, and his oppressive rule and debauchery disgusted his own people. Instigated by the deposed governor of Babylon, one Balas rose against him, claiming to be Alexander, son of Antiochus Epiphanes, and, assisted by the Romans, Jews, and Cappadocians, finally vanquished him in battle. Demetrius was slain in his flight. Demetrius Nicator and Antiochus Sidetes, his sons, reigned successively after him.

DEMIDOFF, a noble and wealthy Russian family, the most distinguished members of which are the following: **I. Nikita,** the son of a serf in the government of Tula, born about 1665. He became a blacksmith and a manufacturer of arms, and in 1699 established for the government the first iron foundery in Siberia at Neviansk, near Yekaterinburg. This served as a model of many other establishments in the Ural mountains, and was presented to him with its dependencies by Peter the Great, who also ennobled him. **II. Akinfi,** son of the preceding, died about 1740. He discovered important mines of gold, silver, and copper in different regions of Siberia, which he and his son Nikita were allowed by the government to work for their own profit by German miners. He established the extensive iron founderies of Lower Tagielsk, and was made councillor of state. **III. Pavel,** nephew of the preceding, born at Revel in 1738, died in 1826. He travelled through several countries, studied metallurgy at Freiberg in Saxony, and natural science under Linnæus at Upsal, founded at Moscow a public cabinet of natural history, a botanical garden, and a professorship of natural science, and a flourishing lyceum at Yaroslav. He also founded a prize of 5,000 rubles to be given yearly to the author who in the judgment of the academy of sciences had enriched Russian literature with the most important and useful work. **IV. Nicolai,** nephew of the preceding, born in 1774, died at Florence, April 22, 1828. He entered the imperial guard at an early age, became aide-de-camp to Prince Potemkin in 1789, served in two campaigns against the Turks, and travelled through Germany, Italy, France, and England. He commanded a regi-

ment equipped at his own expense during the invasion of Napoleon, and was made colonel, count, and privy councillor. He enlarged the wealth of his family by mining enterprises, added to the collections of the Moscow university a new cabinet of natural history, and contributed to the construction of four bridges at St. Petersburg. A collection of his pamphlets, entitled *Opuscules d'économie politique et privée*, was published at Paris in 1830. **V. Anatoli,** son of the preceding, born in Florence about 1812, died in Paris, April 29, 1870. He was educated in France, travelled through southern Russia and adjoining countries, was made prince of San Donato by the grand duke of Tuscany, and in 1841 married the princess Mathilde de Montfort, daughter of Jerome Bonaparte and Catharine of Würtemberg. While he lived in Paris after his marriage, his house was the resort of literary men, artists, and other persons of distinction. Having agreed to bring up his children as Roman Catholics, contrary to the rules of his own country and religion, he lost for some time the favor of the emperor Nicholas, and was summoned home to answer for this offence, but was soon allowed to continue his residence in foreign countries, and lived alternately in France and Italy. His marriage, however, had no issue, and was dissolved in 1845. On the outbreak of the Russian war against Turkey in 1853, he was attached to the Russian legation at Vienna, and made councillor of state. He was liberal with his wealth, and spent considerable sums in the causes of charity and science. He founded an agricultural colony for the cultivation of the vine in the Crimea. He wrote in part the *Voyage dans la Russie méridionale et la Crimée, par la Hongrie, la Valachie, et la Moldavie* (4 vols., Paris, 1839–'41), in which he was assisted by several French scholars and artists who accompanied him, and which was translated into several languages.

DE MILLE, James. See supplement.

DEMIURGE. See Gnostics.

DEMME. I. Hermann Christoph Gottfried, a German theologian and poet, born at Mühlhausen, Sept. 7, 1760, died in Altenburg, Dec. 26, 1822. He became chief director of the ecclesiastical and educational department of the duchy of Altenburg, and wrote under the name of "Karl Stelle" several popular novels and tales, and many religious songs. **II. Charles Rudolph,** an American clergyman, son of the preceding, born at Mühlhausen, April 10, 1795, died in Philadelphia, Sept. 1, 1863. He was destined for the law, and studied at Altenburg, Göttingen, and Halle, but entered the army, and was severely wounded at Waterloo. He afterward studied theology, came to America in 1818, and in the following year became pastor of a Lutheran church at Hummelstown, Pa., but in 1822 removed to Philadelphia, where for 37 years he was associate pastor of St. Michael's and Zion's churches. He was eminent as a pulpit orator and scholar, and edited a German translation of Josephus, to which he added a large number of notes. **III. Wilhelm Ludwig,** brother of the preceding, a German jurist, born in Altenburg, March 20, 1801. He has practised law at Altenburg, Jena, and Würzburg, and written *Das Buch der Verbrechen* (4 vols., Leipsic, 1851; new ed., 1852–'3). **IV. Hermann,** brother of the preceding, born in 1803, was professor of medicine at the university of Bern, where he died Jan. 18, 1867. **V. Karl Hermann,** son of the preceding, born about 1831, died at Nervi, near Genoa, in November, 1864. He was a physician at Bern, and wrote several medical works, the principal of them being *Militär-chirurgische Studien* (2 vols., Würzburg, 1861). In October, 1864, he was tried for poisoning one of his patients named Trumpy, to whose widow he became affianced. He was acquitted, but fled from Bern in company with the woman, and both of them committed suicide at an inn.

DEMMIN, a town of Prussia, in the province of Pomerania, situated in a valley on the frontier of Mecklenburg-Schwerin, 70 m. N. W. of Stettin, on the bank of the river Peene; pop. in 1871, 9,050. It consists of the town proper and three suburbs, and has manufactories of woollens, linens, hats, and hosiery, and an active trade in tobacco, corn, and timber. The town proper is surrounded by a wall with three gates, and was a place of great importance in the time of Charlemagne. It has sustained numerous sieges, suffered severely during the thirty years' war, and was in 1807 the scene of several engagements between the French and Prussians.

DEMMIT, a S. W. county of Texas, intersected by the river Nueces; area, 1,050 sq. m.; pop. in 1870, 109, of whom 6 were colored. Water and timber are scarce. The grass is fine, and stock raising may be successfully pursued, but only a small portion of the land along the river can be profitably cultivated. The total value of farm products in 1870 was $79,050. The number of cattle was 15,591.

DEMOCEDES, a Greek physician, born at Crotona, in Magna Græcia, about 550 B. C. The severity of his father, Calliphon, caused him to leave his home and settle at Ægina, where he was very successful. Thence he went on invitation to Athens, and soon afterward he entered the service of Polycrates, tyrant of Samos. Accompanying his patron on his visit to Orœtes, satrap of Sardis, he was seized with him by the latter, who put Polycrates to death, and sent Democedes as a slave to Susa, where he suddenly gained great favor and rich rewards by successfully curing the sprained foot of Darius Hystaspis, after that monarch's own physicians had failed. Democedes wished to return home, but the king would not grant him permission. Atossa, the principal wife of Darius, was afflicted with a tumor on the breast, and called in the Greek, who promised to cure her if she would swear to do for him anything he might ask. The cure having been effected, he asked per-

mission to return to Greece; and the queen induced Darius to send him thither, accompanied by 15 Persians, on a secret mission to ascertain the best points of attack for an expedition planned by the Persians. The Greek promised to return, and in order to delude the king refused to take any of his own property, saying he should like to find things as they were on coming back to Susa. Laden with rich presents, he went to Sidon, where he and his comrades embarked, and a survey of Greece was made (518). Passing to Italy, Democedes persuaded Aristophilides, ruler of Tarentum, to seize the Persians as spies, while he continued his journey to Crotona. The Persians were soon released, proceeded to Crotona, and seized Democedes in the market place; but he was rescued by his fellow citizens, who also robbed the Persians of their store ship. He remained in his home, and married the daughter of the wrestler Milo. Democedes is said to have written a work on medicine, and his professional reputation was almost equal to that of Hippocrates.

DEMOCRITUS, the founder of the atomistic philosophy, born in Abdera, Thrace, about 460 B. C., died in 361. He inherited a large fortune, travelled extensively in Asia, and after his return held high offices. Of the details of his life little is positively known. He was called the "laughing philosopher," in contrast to the "weeping philosopher" Heraclitus, because he taught that a philosopher must regard the follies of man with the most serene equanimity. He wrote many works on physical, moral, mathematical, musical, and technical subjects. The most complete collection of the remnants of his writings is that of Mullach (Berlin, 1843). He thus explains the theory of his philosophy: "Everything is composed of atoms or infinitely small elements, each with a definite quality, form, and movement, whose inevitable union and separation shape all different things and forms, laws and effects, and dissolve them again for new combinations. The gods themselves and the human mind originate from such atoms. There are no casualties; everything is necessary and determined by the nature of the atoms, which have certain mutual affinities, attractions, and repulsions."

DEMOIVRE, Abraham. See MOIVRE.

DEMONOLOGY, a supposititious science which treats of demons (Gr. *δαίμων*), a name given by the ancients to a class of beings supposed to hold a middle place between men and the celestial deities. Demonology plays a prominent part in the oldest religions of the East, and it was an element in the original worship of the primitive inhabitants prior to the Aryan migration. More ancient in India than the Vedas, it has maintained itself there, either secretly or by public sanction, alike in Brahmanism, Buddhism, and Islamism. Its fullest and most systematic development is found in Buddhism, which reckons six classes of beings in the universe, two only of which, gods and men, are accounted good; the other four (the Asuras, irrational animals, Pretas or goblins, and the denizens of hell) being esteemed evil. The Asuras are the most powerful of the wicked spirits, and are in constant warfare with the gods (Devas). They dwell beneath the three-pronged root of the world-mountain, occupying the nadir, while their great enemy Indra, the highest Buddhist god, sits upon the pinnacle of the mountain in the zenith. The Meru, which stands between the earth and the heavens, around which the heavenly bodies revolve, is the battle field of the Asuras and the Devas. The three lower divisions of the Meru are held by various races of demons, the fourth being the lowest heaven, and occupied by the four Maharajahs, who are appointed to be kings of the demons. Around the Asuras cluster numerous associated groups, as the Rakshasas, probably of Aryan origin, appearing sometimes as gigantic opponents of the gods, sometimes as terrible ogres with bloody tongues and long tusks, eager to devour human flesh and blood, and lurking in fields and forests; the Jakshas, Nagas, Mahoragas, &c. According to their nature and office, the different species of demons dwell in the air, the water, the earth, in holes and clefts, in the lower portions of the Meru, with the gods whose servants they are, or on the golden mountains which enclose the inland seas in the Buddhistic system of worlds.—Among the Persians the Indian terminology is transposed, the great Asura representing the good creating principle, and the devs being the evil spirits. As completed by Zoroaster, the Persian system made the principle and personifications of evil nearly an equal balance and eternal parallel with the good principle and its personifications. Ormuzd created six resplendent angels of love and holiness, called Amshaspands, himself being the seventh and highest; Ahriman then created the six archdevs, to oppose the Amshaspands. Ormuzd created 28 Izeds, or beneficent spirits, who presided over the heavenly bodies, and showered good gifts upon men; but Ahriman made the 28 devs to cause all manner of turmoil and distress. The most powerful and pernicious of the devs was the two-forked Ashmogh. The next series of Ormuzd's creations was an infinite number of Fervers, spirits representing the archetypes of all things, and which became the guardian angels of men, animals, and plants. Ahriman made an equal number of corresponding evil spirits, so that every man and thing has its attendant bad as well as good genius. To arrest the progress of evil, Ormuzd made an egg filled with spirits of light, but Ahriman made an egg which contained an equal force of spirits of darkness, and then broke both together, so that good and evil were only the more confounded. Ormuzd created the material world, but could not exclude Ahriman and his ministers from its deep opaque elements. Ormuzd created a bull, the symbol of life, which Ahri-

man slew. From its blood grew the original plants and animals, to harass and destroy which Ahriman made wolves, tigers, serpents, and venomous insects. From its bleached elementary particles grew the ribas tree, into the stems of which Ormuzd infused the breath of life, and they became the first man and the first woman; but every human being is tempted through his whole career by Ahriman and his devs, which slip into the body and produce all diseases, and into the mind and produce all malice. It is declared that ultimately Ahriman shall be overpowered, driven through torrents of melted lead, purified, and forgiven, and Ormuzd shall reign supreme.—In the ancient Egyptian religion, Typhon (or Set) was the manifestation of the abstract idea of evil, as Osiris was of good. It is abundantly illustrated in the early sculptures that they were regarded as brothers, as parts of the same divine system, and both worshipped as gods. Their names are sometimes interchanged, as if synonymous, in the titles of the older kings; and Typhon is represented in attendance with other gods pouring from a vase the symbols of life and power over the newly crowned king. At a later period evil was resolved into sin; Typhon was confounded with the snake-giant Apophis, the enemy of gods and men, and no longer received divine honors. His name and square-eared figure were effaced; he ceased to be esteemed a necessary antagonistic companion to Osiris, and came to be regarded as acting in opposition from his own free will, and he was expelled from the Egyptian pantheon.—Demons first appear distinctly in the religious world of the Greeks in the "Works and Days" of Hesiod. In Homer they are not distinguished from the gods, and the name is applied to the Olympian divinities. The Homeric personages most nearly corresponding to the oriental and mediæval demons are the Titans, the representatives of force acting against the divine government. Ate is the power that tempts and misleads men. She may even tempt deity also, for she beguiled Zeus himself when Hercules was about to be born (Iliad, xix. 95). Hesiod makes the demons generically different from the gods, yet essentially good. According to him, they were the long departed golden race of men, who after death had become guardian terrestrial demons, watching unseen over the conduct of mankind, with the privilege, granted by Zeus, of dispensing wealth and taking account of good and bad deeds. The Hesiodic creed received an important modification from the later philosophers. The demon of Socrates resembles the guardian angels in Christian conception, and the familiar spirits of mediæval magicians. Empedocles first introduced the distinction of beneficent and maleficent demons, with every grade of each; and he was followed by Xenocrates, Plato, Chrysippus, and Plutarch.—The angelology of the Jews assumed shape only after the Babylonish captivity, when it became tinged with Zoroastrian notions, and at a later period it was still further corrupted by popular superstitions. With the mingling of Jewish and Hellenic ideas in the first Christian centuries, and with the speculations especially of the Alexandrian philosophers, began the manifold developments in the doctrine of demons by the cabalists and other students of the black art, which were increased by the introduction of foreign elements from the Scandinavian mythology, from the Saracens of Spain, and from the Orient through the returning crusaders. These formed the complicated and fantastic systems that in the middle ages were important elements alike in popular belief, poetry, and magic. According to Talmudical stories, Adam had a wife called Lilith before he married Eve, and of her he begat nothing but devils. This Lilith or Lillis figures in the middle ages as a famous witch, and is introduced by Goethe in the Walpurgis night scene in "Faust." The cabalists made Adam the natural king of the world of spirits prior to his fall, and described Solomon as a most accomplished magician. They peopled the fire, air, earth, and water with salamanders, sylphs, gnomes, and undines, to one of which classes all evil spiritual agencies belong. Other writers made nine kinds of demons. The first rank consists of the false gods of the gentiles, whose prince is Beelzebub; the second, of liars and equivocators, as the Pythian Apollo; the third, of inventors of mischief and vessels of anger, whose prince is Belial; the fourth, of malicious revenging devils, whose prince is Asmodeus; the fifth, of cozeners, as magicians and witches, whose prince is Satan; the sixth, of those aërial devils spoken of in the Apocalypse who corrupt the air and cause plagues, thunders, and fires, and whose prince is Meresin; the seventh is a destroyer, causing wars, tumults, combustions, uproars, who is mentioned in the Apocalypse, and called Abaddon; the eighth is the accusing, calumniating devil, called Diabolus, that drives men to despair; the ninth embraces tempters of several sorts, whose prince is Mammon. Wierus, a celebrated demonographer of the 16th century, in his *Pseudomonarchia Dæmonum*, following old authorities, establishes a complete infernal court, of which the following is an outline: Beelzebub, supreme chief of the infernal empire, founder of the order of the fly; Satan, leader of the opposition; Eurynomus, prince of death, and grand cross of the order of the fly; Moloch, prince of the realm of tears, grand cross of the order; Pluto, prince of fire; Leonard, grand master of the sabbats, knight of the fly; Baalberith, master of alliances; Proserpine, archdevil, sovereign princess of malignant spirits; Nergal, chief of the privy police; Baal, commander-in-chief of the infernal armies, grand cross of the order; Leviathan, lord admiral, knight of the fly; Belphegor, ambassador in France; Mammon, ambassador in England; Belial, ambassador in

Turkey; Rimmon, ambassador in Russia; Thamuz, ambassador in Spain; Hutgin, ambassador in Italy; Martinet, ambassador in Switzerland; Lucifer, highest officer of justice; Alastor, executive officer in great undertakings; Nisroch, chief cook; Behemoth, chief cupbearer; Dagon, chief pantler; Mullin, chief valet de chambre; Kobal, director of spectacles and amusements; Asmodeus, superintendent of gambling houses; Nybas, master of pageants; Antichrist, conjurer and necromancer. According to Paracelsus, the air is not so full of flies in summer as it is at all times of invisible devils. Demons and sorcerers celebrate their nocturnal orgies in an assembly called the sabbat, which was first convened, say some cabalists, by the great Orpheus. Sorcerers or witches bear a mark upon their bodies imprinted by the devil, which by a certain inward sensation gives notice of the hour of gathering; or in a case of urgency, a sheep is made to appear in the sky in a cloud, which is seen only by the ministers of Satan. Ordinarily it is necessary either to sleep or to close one eye before proceeding, and sorcerers always fly to the sabbat through the air on staves or broomsticks, or on the backs of subaltern demons, and are often transformed into goats, cats, or other animals. They usually issue from their houses through the chimney. The demon Leonard, in the favorite form of a three-horned goat with a black human countenance, presides at the sabbat, and every guest does homage to him. Stolen children are brought to him, and swear through their godparents to renounce God, the Holy Virgin, and the saints, and are marked by one of his horns with a sign which they bear during their novitiate. Singing, dancing, and feasting are continued till the first crowing of the cock, when the assembly suddenly disperses. Demons also retreat from the sound of bells. Angels and demons have been said to be incorporeal as compared with mankind, but corporeal as compared with God. It is remarkable that the Europeans more frequently represent demons as black, but the negroes of Africa suppose them to be white. Bodin makes them and also the souls of departed men not only corporeal, but round like the sun and moon, because that is the most perfect form; yet they can assume any shape at their pleasure, traverse miles in an instant, transform the bodies of others, and remove them from place to place; the most powerful magicians, too, as Simon Magus, Apollonius of Tyana, Pasetes, Iamblichus, and Odo de Stellis, can force them to deceive all the senses, build castles in the air, represent armies and prodigies, command treasures, reveal secrets, and perform many other wonders.—Sorcery, or black magic, is the art of invoking the infernal powers in order to obtain supernatural knowledge, or the power of performing supernatural things. Cardan relates that his father, after the accustomed solemnities, conjured up, Aug. 13, 1491, seven devils in Greek apparel, about 40 years of age, some of ruddy and some of pale complexion, who boasted their superiority to men, and affirmed that their average life was 700 or 800 years. Eric, king of Sweden, is recorded to have had an enchanted cap, by virtue of which and some magical words he could command spirits to trouble the air, make the wind blow which way he would, and raise tempests. There are witches in Sweden and Norway who make a business of selling favorable winds to sailors. The most mighty cabalistic word is *agla*, which being uttered toward the east will either drive away malignant spirits or produce marvellous revelations. In Webster's "Witchcraft" an account is given of a child who, having heard some fearful spell muttered, caught the words, and afterward repeated them till such tempests and thunderings were produced that a whole village was burned by the lightning. Jacob Boehm declared that he could not without peril to his soul disclose the original name of Lucifer, so tremendous would be its influence. The devil usually appears uncalled to persons in distress, and avails himself of the temptation of the moment to conclude a pact by which he extricates them, and serves them for a specified number of years, after which he shall own their souls. The compact must be written in blood. To invoke a demon, it is necessary, for safety, that the person first enclose himself in a magic circle drawn with charcoal and blessed water, which no evil spirit can cross. The formulas of conjuration being then repeated, the demons first appear with frightful howlings, vomiting fire and fumes of brimstone all about the circle. The conjurer must not exhibit a tremor if he would keep his ascendancy, but must firmly pronounce all the forms of constriction, till at length he reduces them to the human form and to gentle countenance and behavior. The conjuration must be in different words for different demons, times, and purposes, and if rightly performed no demon can resist it. Paracelsus was believed to carry a demon in the hilt of his sword, which the alchemists, however, maintained to be the philosopher's stone, and no demon; and the magicians of Salamanca and Toledo imprisoned demons in rings, phials, boxes, and caskets. Solomon is reputed to have had a signet ring with the hidden name of God engraved upon it, which gave him command of the spirits, and transported him every day at noon into the firmament, where he heard the secrets of the universe. Cardan affirms that no man was ever great in any art or action who did not have one of these demons to aid him. If a demon has entered into a person and "possessed" him, he can be expelled by means of exorcism. Exorcists were recognized by the council of Antioch (341) as a special ecclesiastical order, and in the Latin church are still one of the four minor orders of the clergy. Holy words, as the names of God, Christ, and the saints, holy water, the sign of the cross, the recita-

tion of psalms, litanies, prayers, and adjurations, are used to expel the evil spirits who by divine permission, it is believed, not only tempt the soul, but sometimes also possess the body. At the time of the reformation, the power of casting out devils was claimed, like the power of working miracles, as one of the tests of the Catholic church, and the Jesuits denied that heretical teachers had ever exhibited such power. There was also a popular belief in charms and talismans.—To attribute certain nervous maladies and mysterious diseases to demoniacal agency has been as universal as the belief in demons. The phenomenon of preternatural and involuntary activity is often presented, followed by a cataleptic or trance-like state. The mania is often contagious, constraining the beholder, by a sort of fascination, to become an actor. At the commencement of our era this belief was general throughout the known world, and was recognized in the Gospels, where Christ is represented as casting out demons. Avicenna first designates as lycanthropia the madness of men who lie hid by day, and howl about graves and deserts in the night, and will not be persuaded that they are not wolves. This hallucination spread through the whole of central and southern Europe. Voltaire relates that in the district of the Jura, between 1598 and 1600, more than 600 lycanthropes were put to death by a single judge. Amid the festivities of midsummer day at Aix-la-Chapelle, in 1374, a large troop of men and women from the adjacent country rushed into the city, and in the public squares and churches danced in circles with the utmost violence for hours together, apparently unconscious of the presence of spectators, till at last they sank to the ground exhausted, groaning fearfully. In this state they professed to see visions of good and evil spirits, whose names they shouted out. Incredulous spectators, who came to witness the phenomenon, were themselves seized with an irresistible impulse, and danced and became ecstatic in their turn. The epidemic spread in a few months through the Netherlands and the Rhenish provinces, and exorcism was powerless. The dances were performed in honor of St. John, and were designated accordingly (*chorea Sancti Johannis*). The authorities of the Rhenish provinces having decided to banish every person who was attacked, the disease soon subsided. It reappeared at Strasburg in 1418, and the afflicted, according to Paracelsus, could do nothing but dance until they were dead or cured. Sufferers entitled this malady St. Vitus's dance (*chorea Sancti Viti*), and were accustomed to appeal to that saint for healing. The disease continued in Germany, and Paracelsus boasts of the number he had cured. About the middle of the 15th century a rumor spread through the Pays de Vaud that the environs of Bern and Lausanne were filled with sorcerers and cannibals. Persons being arrested and tortured confessed that they were possessed by devils, and great numbers of them were executed. In 1549 many of the inhabitants of Artois were charged with sorcery, and confessed not only the murder and bewitching of infants and adults, but also participation in the orgies of the sabbat and association with the horrible incubi and succubi. In spite of tortures and burnings, the epidemic of bewitchment spread before the close of the century through Mentz, Treves, Ravensburg, Constance, and Salzburg. In 1491 the nuns of Cambrai were seized with demonomania, and for four years ran like dogs across the country, sprang into the air like birds, climbed trees like cats, hung on the branches, imitated the cries of animals, and divined hidden things. At last the exorcists forced the devil to confess himself the cause of these things. The schools, convents, and nunneries were long favorite localities of the malady, which in these assumed its most hysterical forms. (See WITCHCRAFT.)—Among the best treatises on the subject are: Horst, *Dämonomagie* (Frankfort, 1817); Ukert, *Ueber Dämonen, Heroen und Genien* (Leipsic, 1850); Bodin, *Démonomanie* (Paris, 1579); Colin de Plancy, *Dictionnaire infernal* (3d ed., Paris, 1844); Sir Walter Scott, "Letters on Demonology and Witchcraft" (1830); Catharine Crowe, "The Nightside of Nature" (London, 1848); Henry Christmas, "The Phantom World" (London, 1850); "The Occult Sciences" (London, 1855); and Michelet, *La sorcière* (Brussels, 1862).

DE MORGAN, Augustus, an English mathematician, born on the island of Madura, East Indies, in 1806, died in London, March 18, 1871. His father was an officer in the British army, and he was educated at Trinity college, Cambridge, where he graduated in 1827. He had begun his studies for the bar when, in 1828, on the foundation of the university of London, he was appointed professor of mathematics in that institution. He resigned this post in 1831, but returned to it on the death of his successor in 1836, and retained it till 1866, when he again resigned. He was a frequent contributor to the "Penny Cyclopædia," the "Athenæum," and other periodicals, and to the transactions of various learned societies of which he was a member. He published "Elements of Arithmetic" (1830), "Elements of Algebra" (1835), "Connection of Number and Magnitude" (1836), "Elements of Trigonometry" (1837), "Essay on Probabilities" (1838), "Differential and Integral Calculus" (1842), "Formal Logic" (1847), "Arithmetical Books" (1847), "Trigonometry and Double Algebra" (1849), and "Book of Almanacs" (1851). The work on "Formal Logic" gave rise to a controversy with Sir William Hamilton, as to which of them was the discoverer of a new principle in the theory of syllogisms. The "Arithmetical Books" gives the bibliography of the subject from the time of the invention of printing. The "Book of Almanacs" furnishes means by

which the full almanac for any year down to A. D. 2000, either according to the old or new style, may be turned to at once. He wrote also on calculation of insurances and on decimal coinage. "A Budget of Paradoxes," written by him for the "Athenæum," has been published since his death (London, 1872).

DEMOS, or **Deme** (Gr. *δῆμος*, people), the name applied to the 100, in later times 174, smaller districts into which Attica, including Athens, was divided, and 10 of which formed a *phyle*. Each demos had its own municipal officers, its assemblies, and even separate religious usages. The demarch was the representative of its interests. The chief of the executive summoned the assemblies, and had the management of the public estates and police.

DEMOSTHENES, an Athenian general, prominent in the Peloponnesian war. He was sent in 426 B. C., with Procles, in command of 30 ships, on the annual cruise around the Peloponnesus. Through the representations of the Messenians he was induced to attempt the reduction of the Ætolians, but his Locrian allies failing him, he met with a disastrous defeat. In the same year he was successful against the Ambraciotes and their Spartan allies at Olpæ, and again at the battle of Idomene, where much spoil was taken. In 425 he captured a Spartan force which had besieged him in a fort he had built at Pylos in Messenia; but the glory of this success was claimed by Cleon, who had been sent to supersede him. In 424 he possessed himself by a stratagem of the walls connecting Megara and Nisæa, and shortly after took the latter place. In the same year he failed in an attempt on Bœotia, and was repulsed in a descent on the territory of Sicyon. In 413 he was sent with Eurymedon in command of reënforcements for the Athenians under Nicias who were besieging Syracuse. On the disastrous defeat of the Athenians in a night attack, he counselled immediate withdrawal; but other advice prevailed; a fatal delay took place; Gylippus returned with reenforcements for the besieged, and the Athenians were obliged to retreat by land. While defending the rear against the enemy he was surrounded and captured. His death was decreed by the Syracusan assembly, and he and Nicias suffered at the same time.

DEMOSTHENES, an Athenian statesman and orator, born in Pæania, a deme of Attica, on the east side of Mt. Hymettus, and not far from Athens, probably in 385 B. C., died in 322. His father was an Athenian citizen of the same name; his mother a daughter of Gylon, an Athenian exiled on a charge of betraying Nymphæum to the enemy. The elder Demosthenes died when his son was seven years old, and left to him and his sister, two years younger, an estate valued at more than 14 talents (about $14,000), then regarded as a considerable property, probably equivalent to about twenty times as much, or $280,000, in our day. It was placed by will under the charge of three guardians, Aphobus, Demophon, and Theripides. These, however, proved unfaithful to their trust, and not only disregarded certain complicated directions of the will, in accordance with which Aphobus was to marry the widow and Demophon the daughter of the testator, with certain dowries, while Theripides received a certain annual income; but they so squandered the property that when Demosthenes attained the legal age he found it reduced to 70 minæ ($1,166, equal to about $23,000 at present). His early education, however, was not neglected. According to his own assertion, in the oration on the crown, he received literary training suitable to his rank and fortune. Several of the most eminent men of his age are mentioned as his teachers, and among them Plato, Isocrates, and Isæus, though concerning these there is some doubt. On coming of age, in 366, Demosthenes commenced legal proceedings for the recovery of his property. The case was not finally decided until two years later, although the board of arbitrators, by whom it was twice examined, had rendered a decision in favor of Demosthenes. In 364 Demosthenes brought an action against Aphobus alone, before the archon. Aphobus was condemned to pay 10 talents. The pleas of the young orator in these trials are preserved, but, though models of logical argument, they show scarcely any traces of that vehement and overpowering oratory for which Demosthenes was afterward so distinguished. The prosecution of the guardians brought upon Demosthenes the hostility of Midias, a rich and powerful citizen, who manifested his hatred by a series of outrages, public and private. He forced his way into the house of Demosthenes and insulted his family, for which the latter prosecuted him and obtained a verdict (361). In 354 Demosthenes came forward, and, with great public spirit, offered to assume the cost of the *choregia* of his tribe, which for the two preceding years had neglected to make the usual provision for the entertainments at the Dionysian festival. Midias hindered the execution of this design by every species of annoyance, and finally entered the goldsmith's shop and endeavored to destroy the golden crowns which Demosthenes had provided for his chorus. He also assaulted Demosthenes in the orchestra, while he was performing his duties in the sacred character of choragus. Demosthenes brought an action against him, but whether it ever came to trial is doubted. Midias endeavored to intimidate Demosthenes, but without success; it is asserted by Plutarch, however, that he finally consented to accept 30 minæ, and to withdraw the accusation. The date of these transactions is 353 B. C. Demosthenes had delivered the oration against the law of Leptines in 355. In it the orator discusses with consummate ability the whole doctrine of the sacredness of the public faith and the inviolability of contracts. In the same year he delivered the oration against Andro-

tion, and in 353 that against Timocrates. In 354, having been appointed by lot a member of the *boulē* or senate, he passed the scrutiny required by law, in spite of the opposition of Midias and his party. In the following year he was chief of the state deputation sent from Athens to the festival of the Nemean Zeus. He took an active part at this time in the public debates on questions of foreign policy. He opposed, but not successfully, the expedition to Eubœa in 354, and delivered an able oration against the scheme, then much favored by the political leaders of Athens, of making war against Persia (Περί Συμμοριῶν). In the following year he delivered the oration in behalf of the Megalopolitans, and in opposition to the request of the Spartans for aid in conquering them. The relations between the states of Greece and King Philip of Macedon, who aimed at the conquest of the Hellenic world as a preliminary step to the subjugation of Asia, called the genius and eloquence of Demosthenes into fuller play. The orator early saw through the designs of the Macedonian, and had the courage to set himself in stern opposition to them. He felt the necessity of union among the Grecian states, and urged with wonderful ability, persistence, and eloquence every consideration that patriotism suggested in favor of this plan. The Philippics, so called because they are aimed against the policy of Philip, are among the most brilliant specimens of his eloquence. But the demoralized condition of the states and the corruptibility of public men made his efforts unsuccessful, except for brief moments of alarm. The first Philippic was delivered in 352. In 349 Philip attacked the Olynthians, who had made a treaty with Athens. They sent embassies to Athens imploring aid, and Demosthenes supported their cause in the three admirable Olynthiacs, which roused the Athenians to vigorous efforts. These, however, were not sufficient, and finally Olynthus fell into Philip's hands through the treachery of Lasthenes and Euthycrates. During the Olynthian war Philip had thrown out hints of a desire to make a treaty of alliance with Athens. On the motion of Philocrates, an embassy, consisting of himself, Æschines, and Demosthenes, was sent to open negotiations with the king. Philip appears to have evaded their demand that Phocis, then in alliance with the Athenians, should be included in the treaty. The ambassadors returned; the terms of the peace were discussed in two assemblies of the people, and were finally agreed to on the part of the Athenians, the customary oath having been given to the ambassadors. A second embassy, of which Æschines and Demosthenes were members, was sent to Philip, under instructions to make all haste to receive the oaths from him, because it was apprehended that he would not cease his encroachments until the treaty was completely ratified. But instead of going to Macedonia by sea, they took the longer way by land; instead of finding Philip at once, they waited three months for his return from an expedition to the Bosporus; and finally they allowed him to defer taking the oaths until he had completed his preparations against the Phocians. They accompanied him on his march into Thessaly, and the oaths were not administered until they arrived at Pheræ. This delay enabled Philip to accomplish his object. The Phocians were excluded from the treaty, and Philip passed through Thermopylæ and conquered their country without resistance. The ambassadors having returned to Athens, Demosthenes accused his colleagues of treachery and of being bribed by the king; but Æschines succeeded in having the affair delayed. The oration on the peace, another attack upon Philip, was delivered in 347 or 346. From this time Demosthenes was the head of the anti-Macedonian party, and the vehement political antagonism between him and Æschines, whose oratorical ability made him a leader on the other side, commenced. The oration Περί Παραπρεσβείας (the corrupt conduct in the embassy), in which Demosthenes renewed his exposure of the treachery of Æschines, belongs to the year 343; but the prosecutor was again unsuccessful, and the accused leader again escaped punishment. Philip in the mean time continued his intrigues in the Peloponnesus, and Demosthenes was unwearied in his labors to thwart them. He went on embassies to the several states, and employed all his powers of argument, persuasion, and denunciation. Philip sent a deputation to Athens, charging the Athenians with favoring the Spartans in their designs against the liberties of the Peloponnesians. An assembly was called, Philip's ministers were heard, and in the discussion of the answer to be made Demosthenes (344) delivered the second Philippic. In 343 Philip took Halonesus from the pirates. The Athenians claimed it as an ancient possession of their own. Philip, denying their right to it, offered it to them as a gift; and it was on this occasion that the oration Περί Ἁλονήσου was delivered, though it is doubtful whether this is a work of Demosthenes. The Athenians now made vigorous efforts to counteract the schemes of Philip in Acarnania, in the Peloponnesus, and in Thrace. Philip again complained of their course, and Demosthenes, about 341, delivered the oration on the Chersonese, and the third Philippic, a most vigorous and daring attack. He next caused the expulsion of the tyrants who had been established and supported by Philip in Eubœa. In 340 the Athenians, under the influence of Demosthenes, relieved Byzantium, which the king was besieging. In the same year he introduced a reform into the naval system, by which the burdens of this department of the public service were more equitably distributed, and its efficiency increased. At the amphictyonic assembly, held at Delphi in the spring of 340, Æschines proposed a decree against the Lo-

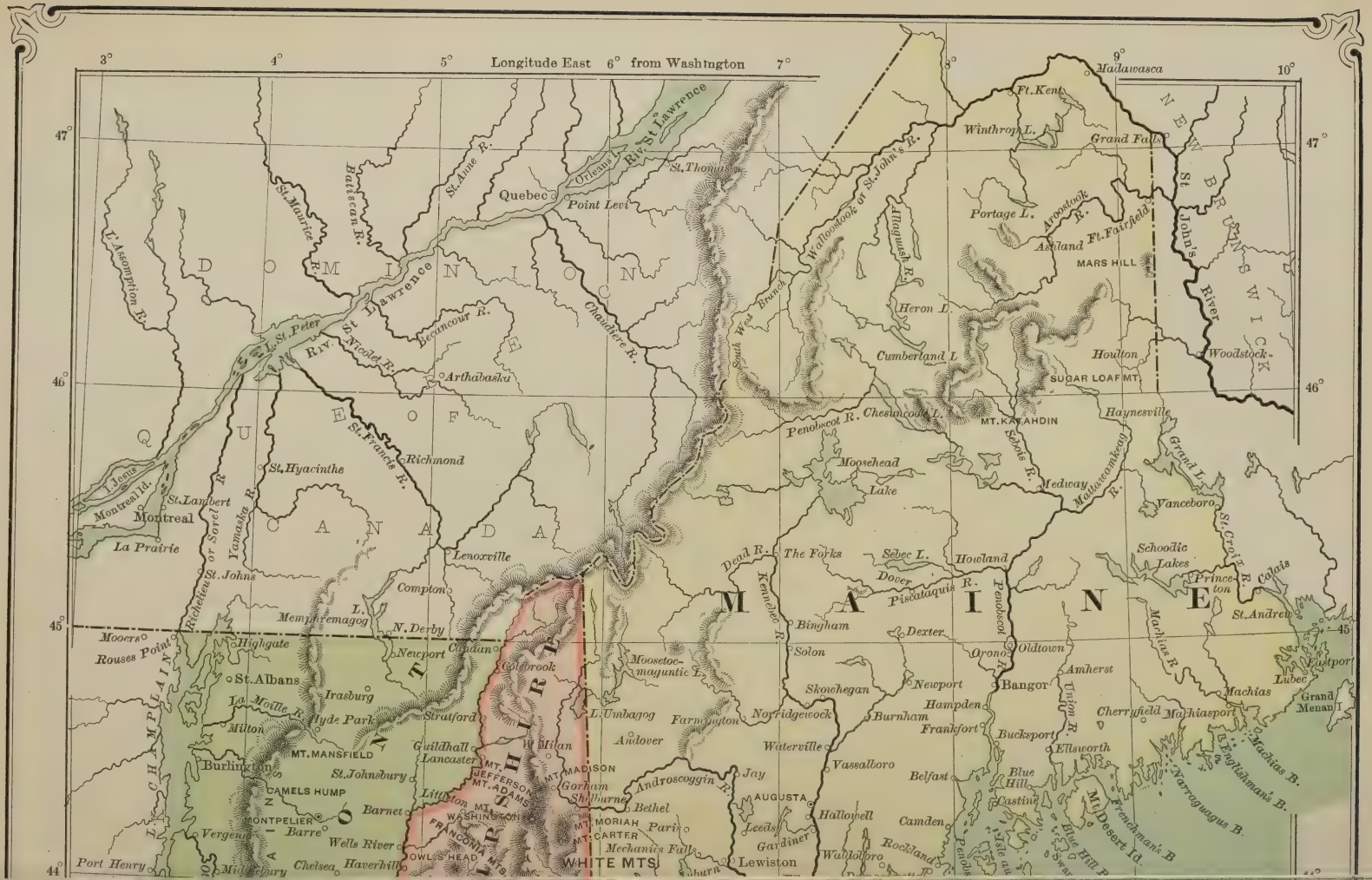
crians of Amphissa for having sacrilegiously occupied lands belonging to the temple. The Amphissians forcibly resisted the execution of the decree, and an extraordinary meeting of the amphictyons was summoned to consider what should be done. Demosthenes, foreseeing the evil consequences likely to result, persuaded the Athenians to send no deputies to the meeting. The assembly met, declared war against the Amphissians, and placed Cottyphus, an Arcadian commander, at the head of the amphictyonic forces. But the undertaking failed, and in the following year the partisans of Philip were sufficiently powerful to appoint him in place of Cottyphus, which gave him the desired opportunity of marching with a strong force into the heart of Greece. He occupied at once the important post of Elatea. The news, arriving at evening, caused the greatest alarm at Athens. An assembly was called early the next morning, and all business was suspended in the Agora. In the midst of the universal dismay Demosthenes took the bema, and in a powerful speech, the substance of which he recapitulates in the oration on the crown (*Περί Στεφάνου*), advocated an alliance with Thebes. The proposal was carried without a dissenting voice, and Demosthenes at once went to Thebes as head of the embassy. The alliance was concluded, and the united armies marched northward to encounter Philip. The great defeat of Chæronea (338) overturned the hopes of the patriotic party. Yet Demosthenes so retained the confidence of the country that the people appointed him to deliver the funeral oration over the remains of those who had fallen, and charged him with the duty of superintending the fortification of the city, in anticipation of an immediate attack. But his enemies seized the opportunity of assailing him by every form the laws of Athens allowed, and he was daily harassed by their opposition. To put an end to this, and to test the strength of public feeling in favor of the great orator, Ctesiphon, a political friend, not otherwise known to history, introduced into the senate a resolution to confer a golden crown on Demosthenes as a suitable acknowledgment for his patriotic spirit and his public services. Before the proposition could become a law, it was necessary to pass it through the popular assembly, and in the interval any citizen might prosecute the author of it by an action called *γραφή παρανόμων*, or indictment for illegal propositions. Æschines accordingly prosecuted Ctesiphon. Technically the accused party was Ctesiphon, but in reality Demosthenes was put on trial for the whole of his political life. For some reason, not clearly explained, the trial was postponed eight years, and finally was held in 330. Demosthenes appeared in the formal character of counsel for Ctesiphon, but in reality in his own defence. The orations delivered by the rival statesmen were elaborated to the highest point of their abilities, and must be considered their masterpieces; but Demosthenes, in force and cogency of argument, in severity of invective, in loftiness of ethical spirit, and in ardent patriotism, far surpassed Æschines. The result was remarkable. Æschines exposed himself to the penalties of malicious prosecution, inasmuch as he failed to obtain a fifth part of the votes. In consequence of this he left Athens, and never returned. King Philip was assassinated in 336, two years after the battle of Chæronea, and six years before the trial on the crown. This event led Demosthenes to renew his efforts to unite the Grecian states against Macedon; but the unexpected vigor of Alexander put an end to his hopes. An embassy, in which Demosthenes was included, was sent from Athens to sue for peace. After proceeding part of the way, his feelings overcame him, and he returned. A false report of the death of Alexander caused another rising among the Greeks, and Demosthenes at his own expense sent a supply of arms to Thebes, the only state which showed energy in the movement. But Alexander suddenly appeared before that city, and completely subdued the spirit of the people by levelling to the ground its walls and all its buildings except the house of Pindar (335). Soon afterward Alexander started on his Asiatic expedition, having appointed Antipater regent of Macedon during his absence. After the conquest of Persia, Harpalus had been left by Alexander in charge of immense treasures at Babylon, while he prosecuted his victorious march to India. He proved faithless, and came to Athens in 325 for the purpose of securing the protection of the city. The Macedonian regent demanded the surrender of the fugitive, and the trial of the popular leaders who were accused of having accepted his bribes. Demosthenes, being among the orators thus implicated, voluntarily offered himself for trial. Although there was no trustworthy evidence against him, so great was the influence of the Macedonian faction that he was declared guilty and thrown into prison; from which, however, he escaped, it is said, with the connivance of the magistrates, and went into exile, passing his time partly at Trœzen and partly in Ægina, gazing daily upon the shores of his native land. When the news of Alexander's death (323) arrived, the Greeks made a fresh effort to throw off the Macedonian yoke. Demosthenes joined the ambassadors sent from Athens to the several states, and again put forth all the power of his eloquence. Demon, a relative, now proposed a decree recalling him from exile. He was brought from Ægina in a public ship, and was met on landing at the Piræus by crowds of Athenian citizens and the principal magistrates, who welcomed him with enthusiastic demonstrations of joy. He pronounced it the happiest day of his life. But the battle of Cranon (322) and the desertion of the common cause by the confederate states, one after another, left Athens to contend single-handed with Antipater, who marched upon

the city. Demosthenes and his friends fled. In the midst of the panic Demades proposed that they should be condemned to death, and the cowardly decree was passed. Demosthenes thereupon took refuge in the temple of Neptune, on the little island of Calaurea; but the right of asylum could not protect him against the rage of Archias, the officer of Antipater, who pursued him to his retreat. Finding himself at the mercy of his enemies, he put an end to his life by poison which he had kept in a quill.—There is a statue of Demosthenes in the Nuovo Braccio of the Vatican, representing the orator in the act of addressing an assembly. The nervous temperament, the spare figure, the concentrated fire and energy exhibited in the face and brow, embody his character with wonderful truth. Demosthenes inherited a delicate constitution, which prevented him from engaging in the gymnastic exercises and field sports of his contemporaries; but he overcame this natural defect by the most rigid temperance in food and drink. He was naturally afflicted with a hesitation in speech and a shortness of breath; but by incredible force of will he cured himself of these impediments. It is said that he forced himself to speak with a pebble in his mouth; and that, in order to accustom himself to the tumults of the popular assembly, he declaimed on the beach of Phalerum to the waves as they swept along the shore. In the formation of his style he took unwearied pains. Whether he copied Thucydides eight times, according to the tradition, may be doubted; but there can be no doubt that from his early youth to the last oration he ever spoke, he never ceased to give the profoundest study to both matter and form. He seldom or never addressed an assembly in an extemporaneous speech, and his detractors used to say that his speeches smelt of the lamp. He was never misunderstood by his hearers, and he adapted his style to his subject. In his legal arguments it is precise, clear, technical when necessary, with no attempt at impassioned eloquence. In his deliberative and political speeches he blends with the closest logic every form of vehement appeal to the feelings which the moment of public peril or of patriotic excitement is fitted to arouse. In private life his manners appear to have been somewhat austere. His tone of sentiment was lofty and pure; his domestic life was as stainless as his public life was incorruptible. In all the virtues of the republican citizen, he left an example which none of his countrymen ever surpassed.—Of the works of Demosthenes there are many editions. One of the most convenient is that of Dobson, in the *Oratores Attici*. Others are those of Taylor, Reiske, Dukas, Bekker, Baiter, and Saupe. The orations of Demosthenes alone have been edited by Wolf, Auger, and Schäfer. Dindorf's text (Leipsic, 1825) is excellent; still better, that of Bekker in 3 vols. (Leipsic, 1855). The editions of single or selected orations are too numerous to be mentioned. For the use of the American student the oration on the crown, edited by Prof. Champlin, the popular orations by the same, and the Philippics by Prof. Smead, are the best. Dissen's *Oratio de Corona*, with a Latin commentary, is admirable. The translations in Bohn's "Classical Library" are furnished with useful introductions and illustrative essays.

DEMOTICA, a town of European Turkey, in Roumelia, 26 m. S. of Adrianople; pop. about 8,000. It is situated on the Maritza, at the foot of a conical hill, on the summit of which stands a citadel, wherein is a palace that was occasionally occupied by the Turkish sultans while Adrianople was the capital of their empire. It is the seat of a Greek archbishop, has several Greek churches, a mosque, schools, public baths, and manufactures of cotton and woollen. Charles XII. of Sweden found a retreat in this town for some time after his defeat at Poltava. The greater part of the town was burned in 1845.

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SUPPLEMENT TO VOLUME V.

COLE, Vicat, an English painter, born in Portsmouth in 1833. He is a son of George Cole, an animal and landscape painter, from whom he received his earliest instruction. His study has been almost entirely from nature, especially among the picturesque landscapes of Surrey, and his pictures are noted for their romantic realism. His works include "Under the Greenwood Tree," "Shadows from the Beeches," "Summer's Golden Crown," "Floating down to Camelot," "The Heart of Surrey," "A Misty Morning," "Noon," "Autumn Gold," "The Day's Decline," "A Showery Day," "Evening Rest," "St. Bride's Bay," "Sunlight Lingering on the Autumn Woods," "A Pause in the Storm at Sunset," "Summer Rain," "Richmond Hill," "Arundel," "The Alps at Rosenlaui," "Loch Scavaig, Isle of Skye," and "A Surrey Pastoral." He was elected a royal academician in 1877.

COLLYER, Robert, an American clergyman, born in Keighley, Yorkshire, England, Dec. 8, 1823. He worked in a factory when a boy, and afterward became a blacksmith. He was a hard student, and used all his leisure in the effort to obtain an education. He united with a Methodist church in 1847, and was granted a license to preach. Three years later he emigrated to the United States, and settled at Shoemakertown, Pa., as a blacksmith and preacher. But he soon came to entertain Unitarian views, and the conference refused to renew his license, on the ground of heresy. In 1859 he became pastor of the Unity (Unitarian) church in Chicago, and in 1879 of the church of the Messiah in New York. He has lectured extensively, and has published "A Man in Earnest," a life of A. H. Conant (Boston, 1868), "Lectures to Young Men and Women," "The Simple Truth," and sermons.

COLORADO. The population of the state in 1880 was 194,327, of whom 129,131 were males and 65,196 females, 154,537 natives and 39,790 foreign born, 191,126 white, 2,435 colored, 612 Chinese, and 154 Indians. There were 93,608 males 21 years old and over, of whom 26,873 were whites of foreign birth; 9,321 persons 10 years old and upward, or 5·9 per cent., were unable to read, and 10,474, or 6·6 per cent., to write. The yield of barley was 107,116 bu.; corn, 455,968; oats, 640,900; rye, 19,465; wheat, 1,425,014; 85,062 tons of hay, 383,123 bushels of potatoes. There were on farms 42,257 horses, 2,581 mules and asses, 2,080 working oxen, 28,770 milch cows, 315,989 other cattle, 746,443 sheep, and 7,656 swine. The number of manufacturing establishments was 599; capital, $4,311,714; hands employed, 5,074; value of material used, $8,777,262; products, $14,260,159; gold mined, $2,699,898; silver, $16,549,274; 462,747 tons of coal. There are in the state about 2,250,000 cattle, two thirds of which are well bred; 1,000,000 of these cattle are in the south, along the Arkansas and Purgatory rivers, and the other 1,250,000 are north of the Divide, along the waters of the Republican, the Platte, and in the North, South, and Middle parks. In 1880 there were 514 public schools, including 10 high schools; expenditures for school purposes, $400,205; pupils enrolled, 22,804; average attendance, 13,807.—The following is a statement of the bullion product for 1881:

Boulder county	$535,482 88
Chaffee county	196,400 00
Custer county	755,600 00
Clear Creek county	2,204,980 34
Dolores county	125,000 00
Fremont county	14,535 50
Gilpin county	2,150,700 00
Grand county	10,000 00
Gunnison county	535,033 00
Hinsdale county	187,375 00
Lake county	12,738,902 00
La Plata and San Juan counties	40,000 00
Ouray county	78,000 00
Park county	350,000 00
Pitkin county	120,000 00
Rio Grande county	280,000 00
Saguache county	53,500 00
Summit county	1,528,000 00
Total	$22,203,508 72

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On the whole, the mining industry was prosperous during 1882. In most of the newer districts a considerable increase of development and production took place. The gross return was somewhat greater than that of 1881. The yield of the Leadville mines was the greatest ever produced in that section. The San Juan country gave a much larger return than ever before. Summit yielded about the same as in 1881, Boulder nearly 50 per cent. more. There were no excitements, and but few important discoveries, yet the development in all sections continued. The most conspicuous event was the removal of the Grant smelter to Denver, and the erection there of one of the finest establishments of its kind in the world. A material advance in the treatment of low-grade ores has been made by the successful establishment of the Bancroft-Walker process, which will take a prominent part in the affairs of 1883. The product of the Leadville district for the last quarter of 1882 was as follows: Pounds of lead, 17,009,228; ounces of silver, 1,336,212; ounces of gold, 2,921. Total currency value, $5,783,127. The total value of the output for the last four years has been as follows:

1879	$10,333,740	1881	$13,170,576
1880	14,187,697	1882	18,220,893

—The railroad system of the state in 1880 had a length of about 950 m., as follows: Of eastern trunk lines, the Kansas Pacific and the Atchison, Topeka, and Santa Fé roads had a mileage within the state, terminating at Denver, Pueblo, and New Mexican line, of 475 m. The narrow and standard gauge roads consisted of the Denver and Rio Grande, from Denver to Pueblo, Cañon City, El Moro, and Alamosa, which had a length in operation of 300 m.; while the Denver and Cheyenne connections had a total distance of 264 m. The roads westward and into the mountains were the Denver and Boulder, 47 m.; the Denver and South Park, about 100 m.; and the Colorado Central, 53 m. Over 1,000 m. of projected road were in process of construction.—The lignite coal fields of Colorado, as well as the extensive deposits of iron, including a superior hematite, are attracting attention. The coal fields cover thousands of square miles. Those best known are embraced within the foot-hill section east of the mountains, extending from Weld to La Paz county. The area extends into the mountains at Boulder on the north, and Fremont on the south. An excellent quality for coking is worked in the mines further south. In 1877 the amount mined was 160,000 tons; in 1878, 200,229 tons; in 1879, about 300,000 tons. The raising of cattle and sheep counts third in the industries of Colorado. The same expansion proportionally was perceptible in this as in mining, agriculture, and commerce, after the close of 1878. The following table gives the estimated or actual number and value at the close of 1879, of the cattle and sheep owned in the various counties:

COUNTIES.	Number of cattle.	Value.	Number of sheep.	Value.	Total number of both.	Total value.
Arapahoe*	70,000	$1,050,000	95,000	$190,000	165,000	$1,240,000
Bent	76,127	1,141,905	122,388	244,776	199,515	1,486,681
Conejos*	10,000	150,000	120,000	240,000	130,000	390,000
Douglas*	40,000	600,000	40,000	80,000	80,000	680,000
Elbert	90,000	1,350,000	100,000	200,000	190,000	1,560,000
El Paso	27,000	405,000	200,000	400,000	427,000	805,000
Huerfano*	24,000	360,000	180,000	360,000	204,000	720,000
Jefferson	10,000	150,000	4,869	9,738	14,869	159,738
La Plata*	50,000	750,000	30,000	60,000	80,000	810,000
Las Animas	45,000	675,000	210,000	420,000	255,000	1,095,000
Larimer	23,560	353,400	54,750	109,500	78,310	462,900
Pueblo	36,000	540,000	100,000	200,000	136,000	740,000
Saguache*	25,000	345,000	25,000	50,000	50,000	395,000
Weld	85,270	1,279,050	200,000	400,000	285,270	1,679,050
All other counties	200,000	3,000,000	570,000	1,140,000	770,000	4,140,000
Total	811,957	$12,040,355	2,052,007	$4,194,014	3,064,964	$16,363,369

—An immense impetus was given to mining for the precious metals in Colorado during 1879. A large area previously practically unexplored was added to the mineral-bearing field, and the work of exploration proceeded with unabated activity. According to Mr. Frank Fossett, the production of bullion in Colorado from its first discovery to 1879, in coin value, was as follows:

YEARS.	Gold.	Silver.	Copper.	Lead.	Total.
Previous to 1870	$27,213,081 00	$330,000 00	$40,000 00	.....	$27,583,081 00
1870	2,000,000 00	650,000 00	20,000 00	.....	2,670,000 00
1871	2,000,000 00	1,029,046 34	30,000 00	.....	3,059,046 34
1872	1,725,000 00	2,015,000 00	45,000 00	$5,000 00	3,790,000 00
1873	1,750,000 00	2,185,000 00	65,000 00	28,000 00	4,028,000 00
1874	2,002,487 00	3,096,023 00	90,197 00	73,676 00	5,262,383 00
1875	2,161,475 02	3,122,912 00	90,000 00	60,000 00	5,434,387 02
1876	2,726,315 82	3,315,592 00	70,000 00	80,000 00	6,191,907 82
1877	3,148,707 56	3,726,279 33	93,796 64	247,400 00	7,216,283 53
1878	3,490,384 36	6,341,807 81	89,000 00	636,924 73	10,558,116 90
Total	$48,217,450 76	$25,811,760 48	$632,993 64	$1,181,000 73	$75,793,205 61

* Estimated by Mr. Fossett.

By the most moderate of the estimates made for 1879, the product amounted to $19,660,479. From the returns of taxable property for 1882, it appears that Lake, Fremont, and Gilpin are the only counties which do not show an increase in their wealth. The increased valuation for the year is $19,884,357.09. The value of the different items of property is as follows:

	Valuation.
$2,642,777\frac{28}{100}$ acres of land and improvements	$18,714,336 00
$2\,245\frac{20}{100}$ miles of railroad and valuation	17,738,153 24
Value of merchandise	7,932,912 00
Amount of capital in manufacturing	907,921 00
Town and city lots	39,187,284 00
74,393 horses	3,138,463 00
6,994 mules	481,727 50
410 asses	5,549 00
423,248 cattle	5,435,616 00
706,048 sheep	1,141,941 00
4,167 goats	4,028 00
4,507 swine	24,333 00
3,431 all other animals	27,467 00
Musical instruments	297,214 00
Clocks and watches	299,631 50
Jewelry, gold and silver plate	87,815 00
Money and credit	3,522,898 25
Carriages and vehicles of all kinds	915,936 00
Household property	725,226 00
All other property	2,366,635 64
Bank and other shares	1,201,873 00
Insurance premiums	233,223 44
Grand total	$104,440,683 57

The total state tax for the year is $610,162.48. The receipts into the state treasury for 1880–'81, including balance, were $440,449.30; expenditures, $395,384.33; balance, $45,064.91.—One of the most remarkable facts in connection with Colorado is the existence of many ancient pueblo ruins in the S. W. section, forming part of the extensive system spread over Arizona, New Mexico, and S. E. Utah. Within the limits of Colorado proper the area of these ruins at the base or south line is about 120 m. wide, and runs north about 60 m., narrowing to a width of not more than 60 m. Within this space are to be found abundant specimens of all the different modes of village life and defence followed by the prehistoric race represented by the ruins. They are most numerous in the valleys of the Rio Mancos, the Elmo and Hovenweep creeks, the Rios Montezuma, La Plata, and Las Animas, and, further to the north and west, the Rios San Miguel and Dolores. Most of these are branches of the San Juan. (See Cliff Dwellers, in supplement.)—The physical aspects of Colorado, like its great economic characteristics, are among the most massive and sublime which the North American continent presents. In broad outlines Colorado offers an extensive system of foot hills and plains, flowing from the Front range of the Rocky mountains eastward for nearly 150 m. The elevation of the plains above sea level is about one mile. This great expanse is nearly destitute of timber, while it is covered by nutritious grasses. The Arkansas and the Platte, with the head waters of the Smoky and Republican forks of the Kansas river, form the eastern drainage system. The San Juan, Gunnison, Grand, and White rivers drain the western portion of the state, and flow into and form the Colorado. The foot hills, extending more or less distinctly for 50 or 60 m. back to the Front range, and at the south to the Continental Divide, rise in altitude until, fading into the range, the great mountains and peaks, like Pike's, Long's, Bross, Lincoln, Massive, and others, are seen attaining heights varying from 12,500 to 14,400 ft. The mountain system has three divisions—the foot hills, the Front range, in which the parks of Colorado are set like great bowls, and the Snowy range itself, to the west of which are massive transverse chains, which belong to the interior or basin system, of which the Salt Lake region is the principal feature. The general course of the Rockies is almost north and south. The Continental Divide is marked by three divisions, consisting of the Sangre del Cristo to the south, the Saguache in the centre, and the Park ranges on the west sides of Middle and North parks, to the north of Leadville and Mounts Bross and Lincoln. Nowhere on the continent, and hardly in the world, can the mountain scenery of Colorado be equalled. The elevations of the most noticeable portions of its ranges or its magnificent peaks are given as follows: In the Front range of the Rockies there are Mt. Evans, 14,330 ft.; Pike's peak, 14,147; Mt. Rosalie, 14,340; and Chief mountain, 11,833. In northern Colorado are the following: Arapahoe peak, 13,520 ft.; Gray's, 14,341; Irwin's, 14,336; James, 13,283; Long's, 14,271; Mt. Guyot, 13,565; and Bald mountain (Gilpin co.), 10,322. In central Colorado, embraced within the Park range, are: Buckskin, 14,296 ft.; Cameron, 14,000; Horseshoe, 13,988; Lincoln, 14,297; Bross, 14,100; Quandry, 14,269; Sheep, 12,589; Silverheels, 13,897; Mezquite range, 12,500. In the Saguache or Snowy range of the central portion of the state, one of the boldest and most stupendously striking mountain ranges in the world, there are: Antero, 14,245 ft.; Elbert, 14,351; Grizzly, 13,956; Harvard, 14,375; Holy Cross, 14,176; La Plata, 14,314; Massive, 14,298 or 14,368; Princeton, 14,196; Shavano, 14,230; Yale, 14,187. In southern Colorado the unnamed mountain peaks are numerous. Those known or recorded embrace the highest elevation but one within the United States. The Sangre del Cristo range, which is the southern portion (in Colorado) of the Continental Divide, shows Baldy peak, 14,176 ft.; Blanca, 14,464; Culebra, 14,069; Hunt's, 14,056; Spanish peaks, 13,620 and 12,720. The San Juan range, whose bulk forms the divide between the Rio Grande del Norte and the San Juan and other tributaries of the Rio Colorado, shows, among others, the following peaks: Eolus, 14,054 ft.; Blaine's, 13,905; Engineer, 13,076; Handier's, 14,149; Pyramid, 14,146; Pridgeon's, 14,054; San Luis, 14,100; Simpson's, 14,158; Snifflen's, 14,058; Stewart's, 14,032; Uncompahgre, 14,235; Wetterhorn, 14,069; Mt. Wilson, 14,280; Telescope, 13,000; Nigger Baby, 13,000. Both these latter are estimates. The highest known at present in

western Colorado are (in the Elk range): Capital, 11,399 ft.; Castle, 14,116; Maroon, 14,003; Snowmass, 13,970; and Teocalli, 13,113. There are over 200 peaks in Colorado 13,000 ft. and upward in altitude. Among the other notable physical features in this state are the mountain lakes, of which there are about a score. Among them the Chicago lakes have an elevation of 11,500 ft.; Grand, 8,153; Green, 10,000; Santa Maria, 9,324; Osborn, 8,831; San Cristoval, 9,000; San Luis, 7,592; San Miguel, 9,720; and the Twin lakes, near Leadville, 9,357 ft. There are about 25 mountain passes in the state, ranging in height from the Raton, 7,863 ft. (through which the Atchison, Topeka, and Santa Fé railroad passes on its way to New Mexico), to the Argentine, 13,100 ft. The Tennessee pass, through which the Denver, South Park, and Pacific narrow-gauge railroad passes, is 10,700 ft. The cañons of Colorado form another and most attractive portion of the singular and sublime scenery of the state. The best known to tourists are those of Boulder and Clear creeks, and the Cheyenne, Platte, and Arkansas rivers. The Grand cañon of the Arkansas is equalled only by the Grand cañons of the Colorado and Gunnison for stupendous features and beauty. In the western portion of the state there are, among others, the cañons of the Colorado, Gunnison, Grand, and Uncompahgre rivers. That of the Gunnison forms a panorama unequalled in the world. The river is penned in for miles, flowing with tumultuous rapidity, by walls of perpendicular stratified rocks, and making a channel not over 300 ft. wide. These walls rise from 1,000 to 3,000 ft. in height, and on their level summits is a second wall, setting back a few hundred feet and rising again to great heights, forming an upper cañon, and showing how the mighty power of water has eroded its way through the very heart of the gigantic mountains. Towers, spires, bastions, domes, and battlements rise on all sides, and the stratified surfaces of the cañon walls are cut all over, as if a mighty music score or a scroll of hieroglyphics were written there. The heights of the Gunnison cañon can be seen from the following figures: At the mouth of Mountain creek the level of the Gunnison is 7,200 ft. above the sea; on the north the first plateau's top is 1,600 ft. above. On the east side the wall is 1,900 ft. high; on the west it is 1,800 ft. above. Below this point the wall of the cañon rises fully 3,000 ft.; the first plateau being 1,800 ft. high, the total elevation is 9,800 ft. above the sea.—The metalliferous characteristics of Colorado have been greatly developed since 1870. The entire range or formation is now known to be mineral-bearing. Every form and combination in which the precious metals are known to exist has been found in Colorado. The mineral zone has been traced from the North park through Boulder co., Gilpin, Clear Creek, Park, Lake, Summit, Chaffee, and the San Juan region, until it crosses the line and is lost in the Colorado plateau. It branches east into portions of Arapahoe, Custer, Las Animas, &c.; westward it holds possession of Rhoutt, Grand, Gunnison, and south again, in the San Juan. Gold occurs in fissures and veins, free and as sulphurets and tellurides; silver in quartz as chlorides and sulphurets, in veins as galena, and as carbonates in contact lodes and deposits, with lead, copper, and iron, as smelting, concentration, and free-milling ores. The Colorado mining laws first provided that a "lode"—the name used there in place of the word "claim" used elsewhere—should be 1,400 ft. long and 100 feet wide on the vein. The discoverer of a lode was entitled to one other claim on the vein; all others had but one of 1,400 by 100 ft. Afterward the local usage gave a width of 300 ft. For a short time the linear extent was 3,000 ft. At present the United States mining law governs all locations. The metalliferous combinations embrace tellurides of gold and silver; sylvanite, which usually contains twice as much gold as silver; and petzite, which is the reverse of sylvanite. There are calavanite (telluride of gold), atiate (of lead), and tetradymite or bismuth. The sulphurets of both gold and silver are of iron and copper. Silver is found as native, white, and ruby galena, carbonate or cerussite, zinc blende, gray copper, silver glance, wire, and pure. It is found in limestone, quartz, talcose slates, and, as at Leadville, with feldspar or iron rock and the dolomite limestone, as foot and hanging walls. Among the more recent discoveries are large bodies of magnetic and hematite iron ores; also beds of semi-anthracite and cannel coal. These are found west of the Continental Divide.—The geology of Colorado is necessarily of great interest and importance. According to Hayden, the post-cretaceous area extends from lat. 36° 30′ to 37° 30′, and from lon. 102° to 103° 30′. The cretaceous area lies to the north of the lines given and broadens to the west. It also embraces the valley of the North Platte. The eastern flank of the Front range is generally marked by the metamorphic rocks. The belt is broad at the centre and narrow and broken to the south. In the southwest the Dolores plateau belongs to this era. The Front range comprises the Watch and Wet mountains, and also the Sangre del Cristo. Toward the south the foot hills are carboniferous; so also is the whole area south of the Huerfano park, along the Sangre del Cristo, on the upper and west side of the South park, and west of the upper west side of the Park range, in the Elk mountains, the Gunnison, and to the east of the Bear river. The tertiary era appears in Las Animas co., and to the southwest of the San Juan mountains; also to the north at the Roon or Book plateau of the Snake river. The eruptive rocks are marked in the Chicorica mesa below Trinidad, around La Veta, at the San Pedro and Rio Costilla; all through the Sangre del Cristo range, about Rosita, south of the South park, and in the Black mountains. The jura-trias system is found in the region of the

Uncompahgre mountains and between the Roaring Fork and Elk rivers. The great divide, or Continental range, embraces a width east and west of about 90 m. It is of the oldest formation, and presents in solitary massiveness every attraction to scientists, explorers, artists, and prospectors. The proof of volcanic action is everywhere visible. Extinct volcanoes are found, and non-mineralized lava is a constant feature of the main range.—Mineral springs abound in Colorado. Salt, soda, and sulphur springs, &c., have been already utilized, and others are known by explorers and prospectors. The most noticeable are the Pagosa in the San Luis park, the Wagon Wheel Gap, the Parnassus, Cañon creek springs, Ouray, those south of Silverton in the Animas valley, Iron Lake, Poncha pass, Middle park, Sulphur, and the Steamboat springs in Rhoutt co. Manitou and Idaho springs are well known. The state board of health have analyzed and reported on the waters.—The area embraced by Colorado is divided as follows: tillable land, 7,323 sq. m.; pastoral land, 55,000; timber—spruce and pine, 20,000; quaking aspen, piñon, scrub cedar, &c., 15,000; barren land, 6,565. On the tillable land there is not more than water enough for the irrigation or supply of one seventh without some system of artificial storage or reservoirs.—The Platte or Shallow river drains the region east of the mountains and north of the 38th parallel up to the 43d. The North and South forks of the Platte are divided at lat. 41° and lon. 101°. The drainage of the North Platte covers an area within Colorado of 2,000 sq. m. The South Platte drains in the state 20,800 sq. m. Its valley is nearly 400 m. long, having an average width of 2 m., and embracing an area of nearly 400 sq. m. The drainage area of the Arkansas within the state is about 28,000 sq. m. Within the valley itself the arable area is about 1,900 sq. m. The San Luis valley has an area of 5,600 sq. m., of which two thirds are in the state, the remainder in New Mexico. Grand river valley has a total arable area of about 1,200 sq. m., of which that of the main stream is but 320 sq. m. The exact area of the Gunnison, Bear, White, and San Juan valleys is not yet known.—Colorado was admitted to the Union July 4, 1876, and has obtained the title of the "Centennial State." There was an agitation to secure the admission of the territory as a state in 1868, but it was ineffectual. In 1874–'5 the movement was revived, and congress passed an enabling act. A constitutional convention met in the winter of 1875–'6, and the constitution framed was adopted July 1, 1876, by a vote of 15,430 against 4,053. On Oct. 3 following the first state officers were chosen; and the first state legislature, consisting of 47 representatives and 26 senators, met at Denver in November. The constitution is modelled largely on that of Ohio, with such changes as different conditions indicated as desirable. The state officers consist of a governor, lieutenant governor, secretary of state, treasurer, auditor, attorney general, and superintendent of public schools. The judiciary consists of a supreme court, and district and county judges, elected for a term of years. The legislature meets every two years. Each organized county in the state is entitled to at least one representative. State boards of agriculture and of health are provided for. There are also inspectors of mines, appointed by the executive. The constitution contains stringent provisions in relation to the state's power to control and regulate corporations, especially railroad companies, which are defined to be common carriers, subject to legislative action and supervision. The mining interest is specially favored by an exemption from taxation until 1886. There are stringent provisions in relation to the settlement of estates, and liberal sections in relation to the property interests of women, the encouragement of schools and taxation therefor, and the increase and protection of an irrigation system, which has already been organized. The second state election occurred Oct. 1, 1878.—The only single event of great importance that has occurred in Colorado, besides the discovery of argentiferous carbonates or cerussite of lead at Leadville, since the state was admitted, is the Ute outbreak in October, 1879. The tribal Indians of Colorado consist of the Tabeguache band of Utes, at the Los Piños agency, numbering about 3,000 persons, and the Yampa, Grand, and Uintah bands, at the White river agency, numbering not over 800. The first named were under control of the chief Ouray, friendly to the whites, and the latter were commanded by Douglas, Captain Jack, and Colorow, who became hostile in the outbreak at the White river agency. The agent, Mr. Meeker, was slain, with several of the agency employees. Three of the women, including the wife and daughter of the agent, were made prisoners. Troops were sent into the Ute country, and some sharp fighting ensued. Major Thornburgh, commanding, was killed at the head of his force. A great excitement followed these events, and it was with difficulty that the miners and settlers were controlled. The Interior department appointed Gen. Adams, a former agent, as special agent, and he secured, with the aid of Chief Ouray, the release of the unfortunate ladies. The same negotiation resulted in the surrender of several leaders. Subsequent negotiations were made for the removal of the White river Indians, for the placing of those belonging to the southern bands on farms in severalty, and for the surrender of the major portion of the Ute reservation, containing 14,784,000 acres, embracing the richest mineral portion of the state, from the southern boundary to 15 m. N. of the 40th parallel, and from the 107th meridian to the western boundary.—The population of the most important towns in 1880 was: Denver, 35,629; Leadville, 14,820; Silver Cliff, 5,040; Colorado Springs, 4,226. See map in supplement to Volume III.

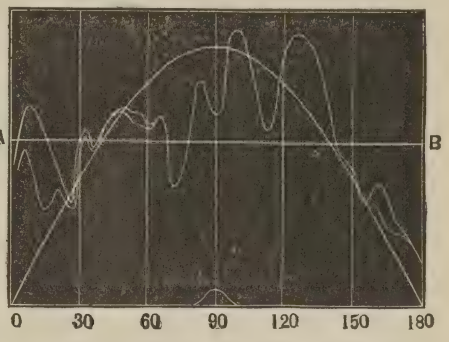
COLOR-HEARING, a phenomenon of which a few persons are conscious, consisting in the appearance of certain colors as an accompaniment of musical sounds or noises. Nusbaumer described it in 1873, as he and his brother had it, and Herren Bleuler and Lehmann, in Zürich, have made a systematic study of it. The colors attending notes differ in different individuals. Generally the higher notes are accompanied by lighter colors, and the lower by darker. Chords either cause the colors which correspond to their notes to appear side by side, or give a mixture of those colors. A musician who was examined perceived a distinct color with each key—viz., C major, gray; G flat major, reddish brown; A major, blue; A minor, lead-color; F sharp major, yellow; and so on. The same note in different keys changes in color according to the color of the key in which it is found. To many persons the same piece played by different instruments appears in different colors. Noises are generally accompanied with colors, these being usually of a gray or brown hue. Increased intensity of sound affects the color perceived, and more so in the case of noise than in that of musical notes: in the latter the intensity of color is increased; in the former a transparent effect gives way in some measure to opacity. These writers pursue their studies into the colors that some minds perceive on hearing consonants, vowels, diphthongs, words, &c., some of which cases seem to be explicable by direct "association." By four persons sound was perceived as a result of sensations of light and color—*e. g.*, a broad, quietly burning gas-flame led to perception of a sound constructed of *w* and a light vowel like *e*. When the flame flickered, the sound grew similar to *l*. In color-hearing no essential difference between the two sexes has been demonstrated. Of 76 "color-hearers," 59 per cent. were males and 41 per cent. females. The percentage of "color-hearers" in 596 individuals examined was only 12·5. The power is to a great degree hereditary.

COLVIN, Sydney, an English author, born in Norwood, Surrey, June 18, 1845. His father was an East India merchant. The son received his early education from private tutors, and graduated at Trinity college, Cambridge, in 1865, taking the chancellor's medal. He was appointed Slade professor of fine arts to the university of Cambridge in 1873, and was re-elected in 1876. In the same year he was made director of the Fitzwilliam museum. He has contributed numerous papers on art subjects to newspapers and periodicals, and to standard cyclopædias and works of reference, and has published in book form "Children in Italian and English Designs," and "Albert Dürer, his Teachers, his Rivals, and his Followers."

COMBS, Leslie, an American lawyer, born in Clark co., Ky., Nov. 28, 1793, died in Lexington, Aug. 21, 1881. He served in the war of 1812, being with Winchester's expedition to the northwest, and distinguished himself by volunteering to carry despatches from Gen. Winchester to Gen. Harrison. With four companions and an Indian guide, he traversed the wilderness more than a hundred miles, and descended the Maumee in a canoe to the fort. For this service he received a captain's commission, and subsequently he attempted a similar feat in carrying despatches announcing the approach of Gen. Green Clay's force, to relieve Gen. Harrison, who was then besieged in Fort Meigs. But he and his Indian guide were discovered when in sight of the fort, and with difficulty escaped to Fort Defiance. Afterward he was conspicuous at Dudley's defeat, where he was wounded and captured by the Indians and compelled to run the gantlet, in doing which he was severely injured, but his life was saved by Tecumseh. In 1836 he raised a regiment, at his own expense, to aid the Texans in their struggle for independence. He became noted as a lawyer, and was prominent in Kentucky politics for many years, being a whig and an intimate friend of Henry Clay, for whom he made many speeches in the canvass of 1844. He held various offices, including those of auditor, clerk of the court of appeals, and member of the legislature. Mr. Combs was the last of the Kentucky pioneers and Indian fighters who became famous for their exploits early in this century. In later life he was enthusiastic in the work of building railroads, and lost a large fortune in it.

COMETS. Prof. H. A. Newton has recently made a careful discussion of the distribution of cometary orbits, and the manner in which that distribution may have been modified by the disturbing influence of Jupiter, with the view of deciding whether comets were formed from the condensing solar nebula, or from matter scattered through the stellar spaces. The former hypothesis was put forward by Kant, while Laplace originated the latter. Prof. Newton begins by pointing out that a comet to be visible to us must in general come nearer the sun than the planet Mars. Thus, if we consider a large number of comets shot from a distant point A, and draw a circle through the sun (S) in a plane perpendicular to A S, and with radius twice that of the orbit of Mars, we may look upon this circle as a target, and only those comets which hit it will be visible to us. The initial velocities perpendicular to A S must have been, in the case of such comets, very small as compared with the parabolic velocity. Thus, if the masses were parts of the original solar nebula, their normal motion should be in circles; but for some reason they never had much motion perpendicular to A S, or else have lost most of it. The small residuals left by larger opposing velocities might as easily take any direction whatever normal to A S, from which Prof. Newton draws the conclusion that the distribution of the inclinations of the orbits through the two right angles should be uniform. This is on the supposition

that A S is large as compared with the imaginary target, and would not apply if the comets came, for example, from the region between Mars and Jupiter. If, however, they came from the distant parts of the solar nebula, the inclinations of the orbits should have been originally distributed uniformly, and the aphelia of their orbits, being the points of origin, should all have been near the ecliptic. But if comets are made from the matter of the stellar spaces, only those whose motions are very nearly equal to the sun's motion can come within sight of the earth. The small residuals that represent the relative motions must therefore, by reason of their smallness, be nearly independent of original absolute motions, and hence the points of origin should be equally distributed over the heavens. Also the poles of the planes of the orbits will be uniformly distributed for any direction of the line A S; and since the latter directions are uniformly distributed, the poles also will be uniformly distributed over the heavens. The inclination of any orbit to the ecliptic will be the distance of its pole from the pole of the ecliptic. Dividing the celestial sphere into zones 10° wide by parallels of latitude, the numbers of the orbits whose inclinations are included in the successive decades of degrees will be as the areas of the zones; *i. e.*, as the sines of 5°, 10°, 15°, &c. Thus Prof. Newton concludes that if the comets come from the stellar spaces, their original orbits should have been so distributed that the numbers of orbits whose inclinations to the ecliptic fall in the successive degrees from 0° to 180° would be proportional to the sines of inclinations. The distribution of aphelia would have been uniform over the heavens; hence their relative frequency at different latitudes would have been as the cosines of the latitudes. The present distribution of aphelia very nearly follows this law, but this in itself is not critical between the two hypotheses; for progression of the line of apsides resulting from perturbations would in time distribute the aphelia pretty uniformly on either hypothesis. One conclusion is drawn from this by Prof. Newton, viz.: that if Kant's hypothesis is true, the period of time since the comets were aggregated and made to describe these long orbits has been very great, and the process of disintegration of comets is very slow. These facts, so far as they have force, favor the foreign origin of comets. Prof. Newton has tabulated the inclinations of all known orbits, and the results are exhibited in the diagram. The abscissæ represent inclinations from 0° to 90°, and the ordinates their relative frequency. The regular curve is the curve of sines, which would be the distribution on Laplace's hypothesis, and the straight line A B that on Kant's. The upper irregular curve shows the actual distribution of inclinations, and the lower irregular curve that when the 13 periodic comets are excluded. The smaller irregularities of the curve may be considered to be due to chance; but there are certain large differences between the fact and each hypothesis, which show either systematic action of perturbations, or else that neither hypothesis



as stated is exclusively true. Prof. Newton has not been able to establish the action of any principle of selection—any cause which would make it easier to discover comets of small inclination or of direct motion; and he therefore considers the possible effect of perturbations. From an investigation of these in various cases of approach to a planet, he concludes that when a comet loses velocity by such an approach, the inclination of the orbit is in general increased. If comets are from stellar space, they come toward the planets at first a trifle faster than if moving in a parabola; and if one of them passes in front of a large planet within a moderate distance, it loses velocity enough to remain a permanent member of our system. Most observed comets have on this hypothesis thus lost velocity, and would therefore have their inclinations increased. This is particularly true for inclinations between 45° and 135°, for the corresponding comets are more likely to pass directly across in front of the planets. Hence, on Laplace's hypothesis, perturbations would increase the ordinates between 90° and 135° at the expense of those between 45° and 90°. Again, the periodic comets form a marked group, and should probably be treated separately; and further it is, according to Prof. Newton, reasonable to suppose that a large part of the area lying below the lower curve is due also to comets of short period. For of the 26 comets with inclinations less than 20°, 9 are noted as periodic, 7 have elliptic orbits mostly of short period, though they have not been certainly detected at any return, and of the other 10 about half were not well enough observed to enable us to say whether their periods were short or long. On correcting the curve by striking off the surplus area below 20°, and bringing back some of the area from the second into the first quadrant to allow for the effect of perturbations, the result corresponds well with the law of sines; and Prof. Newton concludes that the curve of fact does agree well with the hypoth-

esis of Laplace, if reasonable allowance be made for known perturbations and for the comets of short period. Further, it appears that the curve of fact cannot be made to agree with Kant's hypothesis by simple and reasonable allowance for perturbations.—It is well known that Encke's investigation of the motion of the periodic comet of Pons (period, 3·3 years) led him to the conclusion that the progressive shortening of the period of revolution might be caused by a resisting medium in the neighborhood of the sun. The calculations which led him to this supposition were extremely long and laborious, and at the time they were made it was said he was the only astronomer in Europe fit to undertake them. After his death the question of the existence of a resisting medium remained untouched for some years. Another periodic comet, that of Faye (period, 7·4 years), comes very near to the sun, and its theory was examined by Dr. Möller of Lund, for evidence upon this question. No trace of a resisting medium was detected. The question was then in this state: Encke's comet, which comes within a distance of $\frac{3}{10}$ of the earth's distance from the sun, shows a progressive shortening of its period, which may be due to a resisting medium; Faye's, which comes within $1\frac{7}{10}$ of the earth's distance from the sun, shows no such anomaly. The resisting medium may not extend so far from the sun as Faye's. Dr. von Asten of Pulkova undertook the great task of recomputing the motion of Encke's comet between the years 1819 and 1875, and fortunately had largely completed it just before his untimely death in 1878. From an elaborate review of his work by Dr. Schönfeld, the following is taken. No idea can be here given of the technical details, but only the main results stated. The observations of the 16 appearances of the comet (1819–'68) were revised or recomputed, and all compared with theory. The perturbations produced in the path of the comet by the various planets were all determined—in portions of the orbit for every five days, in others for every twenty days. Each appearance of the comet was thus connected with the others. In general, it was found that a steady decrease of the time of revolution was shown, as Encke had said. For example, the periodic time from 1819 to 1822 was 1,212·7 days; from 1822 to 1825 it was 1,211·3 days. Von Asten showed that it was not likely that these changes came from any physical changes suffered by the comet in its near approach to the sun, for the motion after perihelion passage was as well represented by his final elements as the motion before. Changes in the received values of the masses of the planets were indicated by the investigation, but there are other determinations which to some degree negative Von Asten's conclusions in this regard. Many minor researches were undertaken incidentally in the course of the investigation; for instance, the determination of the effect of Diana (one of the asteroids) upon the motion. The main fact established by Von Asten is, that the diminution of the periodic time first noted by Encke is confirmed, and that it is a uniform diminution except for the period 1868–'71, when it is slightly anomalous. Schönfeld has pointed out what must be done to put Encke's hypothesis beyond all question, and records his admiration of the work of Von Asten, and his deep regret that he himself had not lived to complete it. Winnecke's periodic comet has been investigated by Oppolzer for the purpose of determining whether the influence of a resisting medium is felt for this comet. He concludes that either the mass of Jupiter needs to be materially changed (which is unlikely), or a resisting medium must be assumed, to account for the observed acceleration. It is interesting that the resisting power of the medium is nearly the same as deduced from Encke's and Winnecke's comets. The amount of this force upon Faye's comet is shown by Oppolzer to be so little that it would be masked by the effect of small perturbations.—Recent years have been fruitful in interest for the student of cometary astronomy; and though no exact knowledge has been attained on most of the debatable points as to their nature, material for such knowledge has been rapidly gathered, and there is a prospect that they will not remain the inscrutable objects that they appeared even to the last decade. The spectroscope has been aided by photography in their study, and permanent records have been made of features in some cases actually invisible; in others, not hitherto seen; while there has been an increasing tendency to admit the probability of the electrical nature of the action causing phenomena hitherto unaccounted for, and even to entertain anew the possibility of the long-neglected hypothesis of Newton as to their possible utility as feeders of the stock of carbonic acid in the earth's atmosphere. In even the briefest account of the cometary visitors of the past three years, a large relative space must be given to that most remarkable one which even now (May, 1883) is scarcely withdrawn from vision, though this is but one of many of interest. Seven comets appeared in 1881, one of which was the periodical one of Encke. Perhaps the most interesting of these, from its spectrum, was that discovered by Tebbutt. Mr. Huggins's photographs of this showed two strong lines, one in the violet, the other in the ultra-violet region and invisible to the eye, besides others already observed in comets' spectra, indicating the existence of nitrogen, as well as oxygen, hydrogen, and carbon, among its constituents. Of five new comets observed in 1882, two were specially remarkable. The first of these, discovered by Wells at Albany, attained such brightness as to be visible in good telescopes during the daytime, and near the sun; its brilliance, even when approaching perihelion, being very much greater than could have been due to

reflected sunlight alone, and indicating, independently of the spectroscope, the energy of the local action near the nucleus, thus radiating light from its own substance. The spectrum was, in some important respects, quite novel, a marked deviation from the usual type of hydrocarbon band being early seen. The sodium line appeared bright, and so distinct as to be divisible into its two components, permitting evidence of its displacement by the motion in the line of sight, while its appearance indicated a notable density of the incandescent gases to which it was due. Photographs taken by Dr. Huggins showed that difference from the customary spectrum was found also at the violet end. An observation under apparently unprecedented conditions during the total solar eclipse of May 17, 1882, was made of another comet, which was discovered and photographed close to the sun by the observers in Egypt during the brief period of darkness. Its existence was before unsuspected, and it has never been seen since. But all comets of late years, perhaps all seen in this century, must yield in interest to the great comet of 1882. This appears to have been seen in the southern hemisphere on the 3d of September, though the first systematic observations were obtained on its rediscovery on the 7th of that month, at the Cape of Good Hope, where it was conspicuous from the first; the nucleus being already as bright as a star of the third magnitude, and the tail a degree in length. It was approaching the sun, and on the 17th it was so bright as to be visible throughout that day, until in the afternoon it came into visual contact with the edge of the solar disk, with whose reddish yellow the silvery cometary lustre is described by the observers at the Cape as making a striking contrast. Here it instantly disappeared, not a trace of it being visible on the sun, before which it was actually passing. Indeed, it was not known, except by the results of subsequent calculation, that it so passed between the sun and the observer. Its nucleus, of an apparent diameter of five seconds of arc, must have corresponded, at its actual distance, to a real diameter of over 2,000 miles. A smaller object should have been still visible as a black spot, had it been a solid body; and therefore this sudden invisibility, under such circumstances, may be considered as bringing evidence of a novel kind to confirm our previous belief as to the very unsubstantial character even of the densest part of cometary matter. The light of the nucleus at its brightest was almost comparable to that of Venus, and the principal tail, whose length is variously estimated at from 15° to 25°, presented the usual dark streak near the centre, and a broad termination. It was slightly curved, the dark streak just mentioned partaking of this curvature, and its general form was not inaptly compared by a Hindoo observer to that of "the tusk of an elephant." Early in October a faint secondary tail was seen stretching from the head toward the sun, and the nucleus was accompanied by separate faintly seen nebulous patches. Before perihelion the nucleus was, to all appearance, single; after, it became divided into several conspicuous points of light. The spectrum of this comet also gave the sodium line double, with several bright lines coinciding with those of iron, but nothing of the usual banded appearance. The spectrum, however, as well as the telescopic appearance of the nucleus and tail, was constantly changing. One trustworthy observer says of this comet, "You could not leave it an hour without finding some change." From a certain correspondence of its apparent path when near the sun to that of the great comet of 1843, and to that of a conspicuous comet seen in 1880, the startling suggestion was made by Klinkerfues, and for a time was entertained by some others, that this might be the same body, returning with a greatly shortened period; but fuller observation showed that this conjecture was quite unfounded. Its actual distance from the sun's surface at perihelion appears to have been about 300,000 m., and its true period of revolution nearly 800 years. The inferences drawn from all recent cometary studies lead us to think the visible "nucleus" no solid body, but as chiefly gaseous, with a probably minute solid kernel, too small for separate recognition, but from which the apparent nucleus and coma are derived. It is considered increasingly probable that the whole mass of the largest comet is insignificant in comparison with that of the earth. Prof. Young, in a recently published estimate, regards it as little likely that it can be even as much as $\frac{1}{3000000}$. It has long been observed that the principal tail is directed away from the sun, as if projected by a repulsive force exercised by that body in opposition to gravity; but of late there is a very general disposition to admit that there is such a repulsive force, and that the sun not only attracts the whole mass of the comet by gravitation, and not only causes in some way by its heat a projection toward itself of the vapors arising from the nearer or heated side of the nucleus, but that the solar globe is also an electrified body, driving by electrical repulsion these vapors away again to form the tail. It cannot be said that we have attained added certainty that any comets have been originally strangers to our system, that is, beyond question first entered it from without; but the presumption in favor of this view remains unimpaired. Finally, it may be said, with reference to the effect of comets upon our own earth, that scientific opinion seems to be growing more than tolerant of an idea which, even a few years since, was regarded as visionary, the idea (originally suggested by Sir Isaac Newton) that comets may indirectly supply our air with some minute but important constituent. The intimate connection of comets with meteorites; the immense number of meteoric (i. e., cometary)

bodies which enter our atmosphere daily; the known existence of carbon as an almost universal cometary constituent; and the alleged probability that the stock of carbonic acid in this our terrestrial atmosphere would long since have been exhausted without some otherwise unknown source of renewal — all these and other facts seem of late coming to be viewed in relation to one another, and to cause us to look on comets with an enhanced and novel interest as possibly of moment to ourselves.

CONKLING, Roscoe, an American senator, born in Albany, N. Y., Oct. 30, 1829. His father, Alfred Conkling, served as a district attorney, a representative in the 17th congress, a United States circuit judge, and as minister to Mexico under President Fillmore. The son received an academic education, and in 1846 removed to Utica, where he opened a law office in 1849. The next year he was appointed district attorney of Oneida county, in 1858 was elected mayor of the city, in the same year was elected to congress, and was twice reëlected. His committee service began in connection with the affairs of the District of Columbia, and he was afterward chairman of this committee and of that on a bankrupt law, and a member of the committee of ways and means, and also of the special reconstruction committee of 15. His first important speech was in support of the 14th amendment to the constitution. He was elected also to the 40th congress, but did not take his seat, being chosen in January, 1867, United States senator, to which office he was reëlected in 1873 and 1879. In the senate he was from the first a member of the judiciary committee, and at one time or another was connected with nearly all the leading committees, holding the chairs of those on commerce and revision of the laws. He was also a member of the select committee that drew up the electoral bill of 1877, and supported that measure on the floor of the senate. In politics he has been an advanced republican and an upholder of Gen. Grant. In 1876 he received 93 votes in the Cincinnati convention for nomination as the republican candidate for president. In the Chicago republican convention of 1880 he advocated the nomination of Gen. Grant. After the inauguration of President Garfield, senator Conkling became hostile to him through a dispute on the question of patronage, as he and the other senator from New York claimed the right to control federal appointments to office in that state. The president had nominated, March 23d, William H. Robertson for collector of the port of New York, and Mr. Conkling opposed the confirmation of the appointment, claiming that he should have been consulted in the matter, that Mr. Robertson was politically his enemy, and that the nomination was a violation of pledges given to him by the president. Other nominations to offices in the state of New York, made at the same time, were all of men friendly to senator Conkling. When his determined opposition was declared, the president withdrew all the others, leaving that of Robertson to be acted on alone. Finding that he could not prevent the confirmation, Mr. Conkling, on the 16th of May, resigned his senatorship, as did also his colleague, and returned home to seek a vindication in the form of a reëlection. In this, however, after an exciting canvass, they failed, and two other republicans were chosen to fill the vacant places.

CONNECTICUT. The population of the state, by counties, in 1880 and in 1870, was as follows:

COUNTIES.	1880.	1870.
Fairfield	112,042	95,276
Hartford	125,382	109,007
Litchfield	52,044	48,727
Middlesex	35,589	36,099
New Haven	156,523	121,257
New London	73,152	66,570
Tolland	24,112	22,000
Windham	43,856	38,518
The state	622,700	537,454

The report of the treasurer shows that the funded debt of the state, reduced by the payment of $10,000 during the year, was, Nov. 30, 1882, $4,957,600. In addition to the cost of public schools, the state expended for public education in 1882, $49,500 for the normal school, $5,000 for the Storrs agricultural school, and $8,388.03 for the board of education. The largest item in the list of expenditures is for charitable, humane, and reformatory purposes. It amounts to over $276,000. The taxable value of property in 1881 was $327,182,435. The savings banks have on deposit over $84,000,000, the largest amount ever held by them. There are 187,471 depositors each having less than $500 to his credit, and 50,522 each having over that sum. The statistics of the principal railway lines operating within the limits of Connecticut for the year ending Sept. 30, 1882, with the exception of the New York and New England, the Norwich and Worcester, and the New Haven and Northampton roads, were as follow:

NEW YORK AND NEW HAVEN RAILROAD.

Gross earnings		$5,937,807 64
From passenger transportation	$3,393,513 86	
From freight transportation	2,065,855 52	
Total operating expenses		3,803,678 97
Net earnings		$2,134,128 67

CONNECTICUT WESTERN RAILROAD.

Total operating expenses		$816,470 20
Gross earnings		807,106 79
From passenger transportation	$110,110 30	
From freight transportation	184,078 24	
Net deficit		$9,363 41

CONNECTICUT VALLEY RAILROAD.

Gross earnings		$195,873 61
From passenger transportation	$102,699 25	
From freight transportation	77,930 13	
Total operating expenses		195,083 82
Net earnings		$789 79

THE AIR-LINE RAILROAD.

Gross earnings		$308,026 47
From passenger transportation	$74,845 01	
From freight transportation	74,065 09	
Total operating expenses		113,262 86
Net earnings		$194,763 61

The total number of passengers carried on all the roads in the state was 6,671,570. The aggregate length of all the railway lines in the state is 954 m. The railroad companies contribute in taxation toward the expenses of the state, $484,732.42. The insurance companies, including fire and life, foreign and domestic, $342,331.98, and savings-banks, $252,886.10. These three great monetary interests pay in taxation more than five eighths of all the expenditures of the state. The last report of the insurance department shows that the fire companies had over $23,000,000 of assets, and the life companies over $105,000,000.—The Storrs agricultural school was authorized by an act of the legislature in 1881, was opened on the 28th of September of that year, and now has 3 instructors and 13 students. It is the first of its kind in this country, and is intended to be more technical and nearer the farm than the agricultural college. Its object is, not to make scholars, but to train young men to be well-informed and skilful farmers.—Since July 20, 1881, when the newly finished portion of the insane asylum at Middletown was opened for the reception of patients, above 200 have been lodged in it, in addition to the inmates of the old hospital, the year 1881 having begun with 529 insane persons under treatment and ended with 731, of which number not less than 719 belong to the indigent class; but the almshouses of the towns are not yet relieved of them, and their number seems to be increasing.—Of the population in 1880, 305,782 were males and 316,918 females; 492,708 native and 129,992 foreign; 610,769 white and 11,547 colored. The chief agricultural productions were: 557,860 tons of hay, 137,563 bushels of buckwheat, 2,584,262 of potatoes, 1,880,421 of Indian corn, 1,009,706 of oats, 370,733 of rye, 14,044,652 lbs. of tobacco; number of horses, 44,940; working oxen, 28,418; milch cows, 116,319; other cattle, 92,149; sheep, 59,431; swine, 63,699; value of manufactures, $185,697,211.—The population of the principal places, by the census of 1880, was: New Haven, 62,882; Hartford, 42,015; Bridgeport, 27,643; Waterbury, 17,806; Meriden, 15,540; Norwich, 15,112; Norwalk, 13,956; New Britain, 11,800; Danbury, 11,666; Derby, 11,650; Stamford, 11,297; New London, 10,537. See map at beginning of this supplement.

COOK, Dutton, an English author, born in London in 1832. He was educated at King's college, London, and was articled to his father, a solicitor. From 1868 to 1871 was associate editor of the "Cornhill Magazine," and since that date has been dramatic critic for the "Pall Mall Gazette" and "The World." He has published the following books: "Paul Foster's Daughter" (1861); "A Prodigal Son" (1862); "The Trials of the Tredgolds" (1864); "Leo" (1864); "Sir Felix Foy, Bart." (1865); "Hobson's Choice" (1866); "Dr. Muspratt's Patients" (1868); "Over Head and Ears" (1868); "Art in England," a collection of essays (1869); "Young Mr. Nightingale" (1874); "The Banns of Marriage" (1875); "Doubleday's Children" (1877); and "A Book of the Play: Studies and Illustrations of Histrionic Story, Life, and Character" (1876).

COOK, Joseph, an American lecturer, born in Ticonderoga, N. Y., Jan. 26, 1838. His early training was at Phillips academy, Andover, Mass. He entered Yale college in 1858, but his health having become impaired, he left it early in 1861. He entered Harvard college as junior in 1863, and graduated in 1865, receiving high honors and carrying off several of the first prizes. He then entered Andover theological seminary, and went through the regular three years' course. He was licensed to preach, and has done so to some extent; but, not having been ordained, he does not take the title of "Reverend." In September, 1871, he went abroad for two years, and studied under directions from Tholuck, Julius Müller, Dorner, and Kuno Fischer. He then travelled in Egypt, Syria, Turkey, and the chief countries of Europe. Returning to the United States at the close of 1873, he took up his residence in Boston, and in 1875, under the auspices of the young men's Christian association, entered upon his special work as a lecturer on the relations of religion and science. His lectures have been delivered mostly in the Park street church and Tremont Temple, Boston, and are widely known as the "Boston Monday Lectures." They appear, in whole or in abstract, in the leading newspapers, and have led to Mr. Cook's being called on to deliver, on other days of the week, courses of lectures in the principal cities of the United States. Eight volumes of the "Lectures" have been published, each containing "Preludes on Current Events," *i. e.*, short addresses discussing topics of urgent political or religious importance, such as civil-service reform, temperance, fraud in elections, Mormonism, the Chinese question, the Bible in schools, &c. Their titles are as follow: vol. i., "Biology" (1877); vol. ii., "Transcendentalism" (1877); vol. iii., "Orthodoxy" (1877); vol. iv., "Conscience" (1878); vol. v., "Heredity" (1878); vol. vi., "Marriage" (1878); vol. vii., "Labor" (1879); vol. viii., "Socialism" (1880). Most of these volumes have passed through numerous editions. He made a voyage round the world in 1882–'3.

COREA, a kingdom in Asia, occupying a peninsula jutting out from Mantchuria and extending nearly to Japan. It has common boundaries with China and the Russian possessions. The area is about 90,000 sq. m.; the pop. about 16,000,000. The peninsula extends from N. to S., separating the Yellow sea from the sea of Japan, between 34° and 43° N. lat. It resembles Florida in shape. The eastern shore is high, but slightly indented, and nearly destitute of harbors; the western is fringed with a multitude of islands, and has numerous havens and several navigable rivers. A range of

mountains, many of them snow-covered, extends through the length of the peninsula, and is continued in the rocky islands of the Corean archipelago. There is but a narrow strip of coast-land between the mountains and the sea on the east. The eight provinces into which the kingdom is divided are, as a rule, conterminous with the river basins. The climate in the north resembles that of New York, and in the south is as mild as that of South Carolina, but with the wider variations of temperature characteristic of Asia. In the summer, which is very hot, torrential rains occur. About the end of September begins a season of tempests and variable winds.—The fauna of Corea embraces many species of the higher mammals. Tigers of the largest kind abound, especially in the forests of the northern provinces. Leopards are common. Deer and wild swine are found everywhere, the latter furnishing a large quantity of food. Monkeys are numerous in the south, and troops of them occasionally pillage the crops of the farmers. A man-eating species of alligator is sometimes seen in the large rivers. The streams are full of salamanders. The pheasant, falcon, eagle, crane, and stork are common. Vast numbers of cattle are raised in the southern provinces, as the Coreans are eaters of flesh, and crave fatty food. Horses, of a small breed, are abundant. Dogs are commonly kept, and large numbers are consumed as food.—Though acknowledging the suzerainty of the Chinese emperor, Corea is practically independent. Till 1872 Japan exacted an annual tribute. The royal power in Corea descends to the member of the royal house whom the king appoints his heir, as in China. The king is treated with the highest reverence, and exercises despotic powers. He holds communication with the people through the pages of the palace, and, by means of a secret service, ascertains the popular temper, and the mode in which the administration is conducted in the various provinces. Under the king are three ministers, the chief of whom exercises the supreme power during the minority or inability of the sovereign. Next in authority are six ministries, or boards of government, composed of three members each, and intrusted severally with the supervision of the official service, finance, ceremonies, war, justice, and public works. At the head of the eight provinces are provincial governors. The cities, graded in six classes, are administered by magistrates of corresponding rank, and the towns and villages by minor dignitaries. The official service embraces twelve ranks. All are eligible to office who can pass the government examinations; yet the chief posts are held by the nobility. Ceremonial observances and rules of precedence and etiquette govern public and social intercourse. The administrative officers dispense justice in civil, the military commandants in criminal cases. The higher police form a distinct class, whose office descends from father to son. The inferior police and torturers are recruited from the lowest class in the community. The commonest punishment is flogging with the bastinado. The basis of the social order is feudalism. There are various grades of freemen, and several degrees of serfdom or slavery. The nobles are usually the serf proprietors. The master has power to sell the children of his serfs. Besides those who are born in slavery are those who sell or offer themselves as slaves, and those who are sold by their parents in time of famine or for debt. Feudalism and slavery are declining, although the power of the nobles, who constitute in a great measure the official and literary class, is on the increase. In the lowest rank of society are counted the merchants, boatmen, jailers, mail messengers, monks, butchers, and sorcerers. The artisans and laborers are united in powerful guilds, which control the services and wages in the several professions, and pay taxes to the government for the monopoly enjoyed. Women, though treated with marks of ceremonious respect, occupy a despised and degraded position. In the lower ranks they are compelled to perform much of the heaviest labor. The wife shares the social rank of her husband. Concubinage is common. The Coreans are fond of children. Paternal authority is sternly exercised, and sons treat their fathers with the utmost deference. Primogeniture is the rule of inheritance. All the branches of the same family are bound together by a strong clan feeling. The perpetuation of the family is regarded as of supreme importance; adoption is therefore common, as in other countries where the worship of ancestors prevails. The Coreans are voracious eaters, and excessively addicted to alcoholic drinks, which they distil from rice, millet, and barley. Tea is not common. Hospitality and generosity are practised in a remarkable degree. The custom of entertaining all who present themselves, in the outer room of the houses, encourages a numerous class of vagabonds. The chances of wealth to be obtained by discoveries of gold nuggets and the ginseng root and by tiger-hunting, the abundance of fish and game, drunkenness, lavish expenditure on sepulture, and the evils of feudalism and slavery, tend to discourage steady industry and check the growth of wealth, while the custom of mourning three years for near relatives, by delaying marriages, has a marked effect in preventing over-population. The pantheistic cult of Shamanism survives in a more pronounced form in Corea than in Japan or China. Ancestral worship, which was combined with Shamanistic monster-worship in the earliest times, is preserved in its purest type, and underlies the social institutions of Corea. The Confucian code of law and morals, which was developed from the primitive religion, was supplanted by Buddhism as the state religion from the 10th to the 15th century, and was then restored at the accession of the present dynasty. The ancient nature-worship always retained a hold upon the inhabitants of north-

ern Corea, while in the south and among the educated classes Buddhistic ideas prevail. The principles of justice and moral conduct are, however, derived from the tenets of the Chinese sages.—The history of Corea begins, according to Chinese tradition, with the founding of the ancient kingdom of Chosen by Ki Tse, who brought a colony of immigrants composed of the defeated army of Chow Sin, the last of the Shang dynasty. The date given is 1122 B. C. A numerous aboriginal population of savages were instructed by the colonists in the arts, customs, and political institutions of feudal China. The main part of ancient Chosen lay W. of the modern boundaries of Corea. The neighboring kingdom of Yen encroached upon Chosen, but the latter afterward recovered the lost territory. Yet when the Han dynasty uprooted feudalism in China, and suppressed Yen with the other petty states, Wei-man, one of the leaders of an exodus of Yen people into Chosen, overthrew the Ki Tse dynasty by craft and violence in 194 B. C. With the reign of Yukio, grandson of Wei-man, the independent existence of Chosen came to an end. It was forcibly incorporated with the Chinese empire in 107 B. C. The aborigines of the Corean peninsula, like the tribes north of them, received the rudiments of culture from refugees of Chinese revolutions. The peninsula was divided between two semi-savage tribes of the same race, who pursued agriculture and dwelt in houses, but lived under a patriarchal form of government in independent clans. After the fall of the Tsin dynasty, in 209 B. C., a body of Chinese refugees fled to Corea and, crossing the mountains, settled in the coast land on the eastern side. They gradually acquired dominion over the other tribes of that region, and taught them the working of iron, the cultivation of the silkworm, and other arts. Another state was founded among the northernmost of the two original tribes, occupying the broad plains of the western slope, by the king of Chosen, who was expelled by Wei-man. It gradually extended over the whole of the territory of these tribes, called Ma-han. The name of this kingdom was Hiaksai. A third kingdom, Korai, was established in the north, in the territory of ancient Chosen, by the Fuyus, who wrested the country from the Chinese. The Fuyus were a race, alien from the Chinese, whose original seat, called Korai, was north of the Sungari river. South of this river, in the fertile plain between it and the Shan Alyu mountains, they built up the kingdom of Fuyu, in which, under feudal institutions, borrowed probably from China, a degree of civilization was reached. Emigrants from Fuyu established a new realm, Kokorai, in the mountains between Fuyu and Chosen, whence this vigorous northern race overflowed into the plain that formed the ancient kingdom of Chosen, calling the kingdom Korai after they changed its seat. They developed into a compact military nation, able to resist the power of China, and extending their migrations and conquests southward over the peninsula of Corea. Yang, the last of the Sui emperors, sent an expedition, said to have numbered 1,000,000 men, to reduce Korai to subjection. Remote from the base of supplies, in a malarious country, and subjected to the harassing tactics of the Koraians, this prodigious army perished like one sent by the preceding emperor, and a third one sent the following year. The Koraians were impregnable in their fortified cities, while their swift cavalry could demoralize an advancing and destroy a retreating army. The failure of these expeditions caused the fall of the Sui dynasty. The three kingdoms of the peninsula were in a constant state of warfare until the 10th century. Hiaksai became the leading state in civilized arts, and adopted Buddhism about 384 A. D. Thence letters and ethics were first introduced into Japan. In 660 A. D. this kingdom was conquered by the Tang emperors, and annexed to China. A rebellion, started by Buddhist priests and aided by a Japanese army, was suppressed ten years later, and the country was laid in waste. Those of the inhabitants who did not flee to Japan were reduced to slavery. Hiaksai, in great part a deserted wilderness, as well as all of southern Corea, fell under the sway of Shinra, an ally and vassal of China. The refugees introduced ceramic art, established schools, and gave the first start to Japanese literature. In the middle of the 7th century the Tang emperor, coveting the territory west of Yalu river, invaded Korai and defeated the army in the field, but, unable to capture the fortified city of Anchiu, was forced by the failure of supplies and the advent of cold weather to return discomfited to China. In the next reign the kingdom was subjugated, with its 176 cities and from 4,000,000 to 5,000,000 inhabitants, after an independent existence of 700 years. The Yamato tribe, which became dominant in Japan, was of the same Fuyu stock that eventually supplanted the Chinese in the supremacy of Corea. From Shinra went out emigrants who settled in the island of Kiu Shiu, forming an aristocracy that disputed the rule of the Yamato conquerors who came later. According to Japanese tradition the mikado Chiu-ai, about the year 200 A. D., attempted to reduce the mother country, Shinra, to vassalage, in order to suppress the rebellious instincts of the people of Kiu Shiu, which design was accomplished by his queen, Jingu, after his death in battle. Shinra, the earliest seat of civilization in Corea, always entertaining close relations with China, enjoyed during the brilliant Tang era (618–905 A. D.) a period of progress and prosperity. It was invested by its suzerain with the dominion of the conquered kingdoms of Hiaksai and Korai. Buddhism was introduced into Shinra in 528, and one of its fruits was the development of the Corean alphabet. When the powerful kingdom of Puhai, between the Tumen

and Sungari rivers, was destroyed by Kitan tribes from the north, about 900 A. D., many of the inhabitants settled in the territory of Korai. Wang, a descendant of the old royal house of Korai, collecting an army, revolted against the sovereignty of China and the dominion of Shinra. As the largest part of the population of the peninsula were of Fuyu blood, he found no difficulty in uniting them against their conquerors. The rebellion was successful, and the whole of Corea became a unified state, with its capital at Sunto, now called Kaiseng. It was called by the old name of Korai. The Coreans prospered and advanced in civilization. The religion of Buddha was devoutly cultivated, and the invention of printing gave an impulse to literature and education. The Coreans engaged extensively in commerce at this period, and the Arabs who visited Corea learned there the use of the mariner's compass. In 1241 Corea was overrun by a Mongol army, and it formed a part of Cathay until the disintegration of the great empire founded by Genghis Khan. It was the base of the unsuccessful expeditions fitted out by Kublai Khan against Japan. This fact intensified the traditional hostility between Japan and Corea. For centuries Corea was subjected to incursions of Japanese pirates, who extended their raids also to the nearest coasts of China. The Coreans were unable to keep any ships on the sea, and almost forgot the art of navigation. They could only defend their cities against the Japanese freebooters by an organized system of fire signals and military defences. In the latter days of the Mongol dynasty the Chinese tribute was left unpaid. The Ming emperors who succeeded summoned the Corean king to pay his homage, but the descendant of Wang refused. This was the signal for a revolution, in which the king was dethroned, and Ni Taijo, the first of the dynasty now reigning, was elevated to power in 1392. The old name of Chosen (Chinese for "Morning Calm") was revived and remains the official designation for Corea. The capital was transferred to Han Yang, commonly called Seoul ("the capital"). Under the influence of the Chinese court the Buddhist religion was replaced by the Confucian ethics; the Chinese system of educational tests for appointments to office was introduced; the Chinese costume was adopted and has remained unchanged in Corea, though in China the national dress was changed in consequence of the Mantchu conquest. The third ruler of the line of Ni set up a public receptacle for direct petitions to the king, and the right of petition exists now in other forms. To keep out the Mantchus, the next swarm of Mongol invaders, a wide belt of fertile land on the frontier was depopulated and left to grow up to forest. Enjoying the friendship of China and fearing nothing from Japan, which was torn by intestine disorders, the military organization fell into decay. Japan in the latter part of the 16th century, after 200 years of anarchy, was united under a strong ruler, Hideyoshi, better known by the title Taiko. With the veteran army with which the feudal daimios were brought to obedience, he conceived the idea of attacking China. He first entered into relations with Corea, which had long neglected to pay the customary tribute, exacted, according to tradition, since the 2d century. Corea elected to remain under the protection of China, and an army of from 200,000 to 300,000 men was sent to reduce it to subjection. The Coreans prepared for defence, but were no match for the Japanese, who possessed improved arms, including efficient cannon and matchlocks. The Japanese landed two armies, under rival generals, which swept everything before them, and took the capital without a blow. During the same year, 1592, they overran the northern provinces, again putting the Corean army to flight. The Coreans mustered courage after gaining a naval victory, and awaited the tardy arrival of succor from China. A small Chinese army was cut to pieces by the Japanese, and another of 60,000 troops was then sent, which arrived unawares. With the aid of the Coreans, who made various improvements in the art of war, among them the use of explosive shells, they expelled the Japanese from the Pinang and the three other northern provinces. The allies then marched on to Seoul, but were beaten in a pitched battle by the better-armed Japanese. Famine in Corea, and pestilence in the Japanese camp, led to the withdrawal of the troops; but when no satisfactory terms of peace could be obtained, a second invading force sailed, in 1597, to Corea, which was garrisoned anew with Chinese troops. The Japanese, though suffering defeat on the sea, beat the Chinese in the field, but retired before an overwhelming force, pillaging the cities in their way to the seacoast, where they fortified their camp at Urusan, 35 m. N. of Fusan. Here they were besieged by a large Ming army, which the Japanese, with the aid of reënforcements from Fusan, defeated in February, 1598, after the garrison, beleaguered for a year, was nearly reduced to starvation. On the death of Hideyoshi in the same year the Japanese forces were recalled from Corea, and the desolating war was ended. The number of Coreans slain, whose ears were sent to Japan to build a triumphal mound, is reported as 185,738; of Chinese, 29,014. Corea paid tribute to Japan, and sent an annual embassy to pay homage to the Tycoon. The Japanese held the port of Fusan, through which a small trade was carried on between the two countries. The cotton and tobacco plants, as well as gunpowder, were introduced into Japan from Europe, and into the Asiatic continent through Corea. In 1619 Corea, involved in the war between China and the Mantchu power, faced these northern invaders for the first time. In 1627 a Mantchu army descended into Corea, laid waste the country, and threatened Seoul. The king made his submission to the Mantchu

sovereign; but on the neglect of Corea to fulfil the terms of the treaty, it was overrun a second time in 1637. When the Mantchus succeeded in overthrowing the Ming dynasty and establishing their power in China, the Coreans were treated with leniency. The Tartar conquest caused many of the most intelligent Chinese to emigrate to Corea and Japan. The Coreans, after the Japanese and Mantchu invasions, adopted the policy of isolation; the only intercourse between the people and foreigners was at an annual fair held alternately at Hun-chun, on the Chinese, and Kionwen, on the Corean side of Tumen river, and the equally limited traffic with the Japanese at Fusan.—Christianity took root in Corea at the close of the 18th century. A group of Corean scholars were attracted to the new faith by Jesuit tracts from Peking, where a Christian church was protected by the Tartar emperors. The Christian doctrines were especially repugnant to Coreans, because they condemned the worship of ancestors; but the religion spread until, in 1800, there were 4,000 converts. The death of the king in that year was followed by a pitiless campaign of extermination against the Christians. The faith was still cultivated in secret, and in 1835 a French priest entered Corea in disguise. He was followed by two others, and there were 9,000 converts when, in 1839, the court party, which was in favor of extirpating Christianity, gained the ascendency, and the French missionaries were put to death, with many of their followers. In 1845 Jean Joseph Ferreol, who was consecrated bishop of Corea, stole into the country after several unsuccessful attempts. Other missionaries followed.—The war of 1860, in which the Chinese empire was humbled, gave the Coreans new ideas of the power of the western barbarians. The cession to Russia, in 1860, of the Ussuri province, immediately north of Corea, produced a panic, and impelled the government to strengthen the defences at great cost. In 1864 the direct line of the Ni dynasty died out, and there was no legitimate heir to the throne, as the deceased king, Chul-chong, had not appointed a successor. The widow of a former king seized the emblems of royalty, and nominated the infant son of the prince Ni Kung, and the latter assumed the regency, which he exercised despotically for nine years. He was a bitter foe to the Christians, who, presuming on the newly awakened dread of the Christian powers, grew bold and defiant. In January, 1866, a Russian man-of-war brought a demand that Corea should be opened to Russian trade. The Christian Coreans petitioned the regent to form an alliance with England and France, so as to prevent the Russians from carrying out their threat to march troops into the country, and this proposal was the occasion of fresh persecutions. Berneux, the French bishop, and the other priests were cast into prison, and executed, with insults and tortures, in the month of March. Three only escaped to tell the fate of their colaborers. Thousands of Christians were put to death or banished. In October, under the directions of the French diplomatic representative in Peking, a French squadron ascended the Han river. The fortified town of Kang-wa was captured by storm, Oct. 16th. Although the shells and long-range artillery of the French struck terror to the Coreans who encountered them, the nation prepared for war with its usual energy and spirit. A company that marched confidently against a fortified monastery, manned by a regiment of tiger-hunters from the north, was nearly annihilated by a single volley. The French thereupon reëmbarked and hastily sailed away, first giving the town of Kang-wa to the flames. In August of the same year the American schooner General Sherman was destroyed at Pingan, and the five Americans and Englishmen on board were murdered. This vessel brought goods to trade with, but as it was heavily armed it was suspected of an intention of robbing the tombs of the kings, which were supposed to contain golden coffins. Commander Shufeldt, despatched in the Wachusett to inquire into the affair, ascended the wrong river and returned without obtaining an explanation. In the spring of 1867 a party of filibusters landed in Corea from a steamer and made an attempt to rob a royal tomb. The massacre of the priests and the retreat of the French expedition brought European relations with China and Japan, as well as Corea, to a critical pass, while this buccaneering attempt confirmed the Coreans in their opinion of the savagery of Europeans and the immorality of the Christian religion. In 1870 the state department at Washington directed Minister Low, in coöperation with Rear Admiral Rodgers, to seek a treaty with Corea guaranteeing the right to trade and security to shipwrecked mariners. Admiral Rodgers interpreted this mission as authorizing a hostile demonstration. With five vessels, only two of which could ascend the Han river, he arrived in Corea in May, 1871, and the two gunboats took soundings in the river, while waiting for answers to the despatches. When they arrived off the Kang-wa forts the Coreans opened fire, and the commander determined to revenge this supposed insult to the flag. Ten days later, June 10, they steamed up the river again, prepared for action. A landing party of marines dismantled the forts one after another, driving the Coreans away with artillery fire, but only captured the main fortress after a desperate hand-to-hand fight with picked Corean troops. The retirement of the American fleet, as in the case of the French expedition, was looked upon in Corea as an acknowledgment of defeat.—To a summons to resume the old relations of friendship and vassalage, sent by the mikado after the Japanese revolution of 1868, was returned an insolent answer, which excited a war party in Japan, headed by Saigo, of Satsuma, but the war project was rejected

COROT, JEAN BAPTISTE CAMILLE

Born in Paris, July 20, 1796; died there February
1826 he went to Italy, and in study-

by the cabinet in 1873. The king of Corea, who attained his majority in that year, was guided in his policy by more enlightened and progressive views than his father, the late regent. The neutral belt on the northwest was cleared of outlaws by Chinese troops in 1875, and in 1877 was annexed to China. The tension in the Japanese relations became critical when the crew of a Japanese war vessel, mistaken for Europeans by reason of their uniform, were set upon at Kang-wa, where they landed for water. The Chinese government was interrogated as to its relations with Corea, and disclaimed all authority and responsibility. A Japanese envoy was conveyed by a naval squadron to Seoul, and concluded a treaty of commerce, on Feb. 27, 1876, to which the Corean king consented on the advice of the Chinese government. In Japan the war party were dissatisfied with the result. Saigo, of Satsuma, their leader, organized on this account the disastrous Satsuma rebellion of 1877. Commercial intercourse with Japan was begun through the port of Fusan. The Japanese renounced their claim to tribute, and recalled the garrison of Fusan, a course which exasperated the military party, to whom the supremacy over Corea seemed a vital point of national honor. All the commercial nations who had fleets in the east had applied for commercial concessions before the signing of the Japanese treaty, and they now redoubled their efforts. Commodore Shufeldt was specially commissioned by congress to seek treaty relations again. The Coreans were divided not only on the question of foreign intercourse or exclusion, but on the question whether they should follow the example and guidance of Japan or remain under Chinese influence. The progressive party was represented by the king, the queen, and several influential statesmen; the exclusionists were headed by the late regent. The American representatives secured the influence and coöperation of the Chinese government. Treaties with the United States and China were signed in May, 1882. Great Britain obtained a treaty of like tenor in the following month, and Germany got one signed at about the same date. The anti-foreign party incited a riot on the 23d of July, by playing upon the passions and superstitions of the populace. The king was attacked, and the Japanese embassy mobbed. Tai-wen Kun usurped the authority of the king, who was kept in confinement. The Japanese envoy returned within a month, with an armed escort, while the Japanese prepared for war. But the matter was compounded by the payment of a money indemnity and the extension of the Japanese privileges. The Chinese envoy, who had previously remained inactive, then called out his guard, seized the person of the usurper, who was sent to China, and restored the young king to authority, thus asserting the principle of Chinese sovereignty, which was affirmed also in the Chinese and American treaties.

COROT, Jean Baptiste Camille, a French landscape painter, born in Paris, July 29, 1796; died there, Feb. 22, 1875. He entered the atelier of Michallon in 1822, and after the death of that artist studied first in Victor Bertin's atelier, and then in 1826 went alone to Italy, where he passed several years. Corot was the leader of the naturalistic school of French landscape painters, and broke away from the academical style as definitively as his followers, Théodore Rousseau, Diaz, and Troyon. He first exhibited a "View of Narni and the Roman Campagna" in 1827. Among his most famous works are several "Views in Italy," a "Dance of Nymphs," "Souvenir de Marcoussis;" "Morning Effect" and "Evening," exhibited in 1855; a "Sunset," 1857; and an "Idyl," 1859. Corot rendered the original and remarkably poetical impressions which he received from nature with rare power and feeling. He painted classical and Biblical scenes, making more of the accessory of life than the classical landscapé painters.

CRANBROOK, Gathorne Hardy, viscount, an English statesman, born at Bradford, Yorkshire, Oct. 1, 1814. He was educated at Shrewsbury and Oxford. He represented Leominster in parliament from 1856 till 1865, when, after a warm canvass, in which Mr. Gladstone was his opponent, he was elected for the university of Oxford. In 1858 Mr. Hardy was appointed under-secretary for the home department in Lord Derby's administration, and in 1866 president of the poor-law board. In 1867–'8 he was secretary of state for the home department, and on the formation of Disraeli's administration, in 1874, he became secretary of state for war, subsequently succeeding the marquis of Salisbury as secretary of state for India. In May, 1878, he was raised to the peerage as Viscount Cranbrook. He left office, with Lord Beaconsfield, in April, 1880.

CREMATION, the disposition of the dead by burning. It has been practised from the earliest times and among many nations. With the Greeks both inhumation and cremation were employed, but with the Romans, during the last years of the republic and under the empire, burning was much the more common. (See Burial.) The Jews only resorted to fire in exceptional circumstances, and there is no record that it has ever been customarily employed by any Christian nation. Burning was practised by some of the western peoples, and is still in India (where portions of the half-consumed body are frequently thrown into the river) and some other countries of Asia, and by a few tribes of North American Indians. It was given up in Europe as Christianity spread, and disappeared at Rome during the 4th century. A proposal to revive it was made during the French revolution. Of late years the subject has been much discussed in Europe and America. The grounds on which its adoption is urged are those of economy, a regard for the health of the living, and a horror of the

23, 1875. In 1826 he went to Italy, ing nature as he continued to do on returning to France, in Provence, Normandy and Fontainebleau, learned to couple breadth of treatment with careful though not obtrusive detail. An eminently suggestive and refined painter, gifted with a highly poetical and tender feeling, he has been called, from his peculiar excellence in treating still water, the sleeping woods, the broad, pale horizon and the veiled sky, "the Theocritus of landscape painting."

"As Corot was a very celebrated artist, somebody persuaded him to etch, and the consequence was that he sketched on the copper as if he had been making a *pochade* with the brush. Now, in oil painting, this kind of sketching is of use, because it gives tone and colour, though at the sacrifice of form, but in etching such work could never have much value unless all the tones were of the most wonderfully delicate truth, which they are not likely ever to be. Corot is not ignorant of form, but he abandoned the study of it many years ago in order to direct his attention exclusively to a certain kind of effect. . . . And yet, in spite of these defects, the few etchings of Corot have one merit and charm — they do certainly recall to mind, by association of ideas, his charming work in oil, so full of the sweetest poetical sentiment. All sins are forgiven to the true poets. Corot may not be a great poet as Turner was, but he is a true one. He feels the mystery of nature; he feels the delightfulness of cool, grey mornings and dewy evenings; he feels the palpitating life of gleaming river-shores and the trembling of the light branches wherein the fitful breezes play. He has an intense sense of the glimmering indecision and mystery of natural appearances, and he does not, as it seems to us, draw and paint with precision simply because his attention does not fix itself on that which is precise."

P. G. Hamerton.

Etching and Etchers, pp. 223, 224.

Etched about 1861.
Proof on Holland paper.

3 **The Same**
Proof on *chine collée.*

4 **Un lac du Tyrol** (Beraldi No. 4)
Signed, in the plate, at the bottom to the left.
Etched about 1868.
Proof printed upon green paper.

5 **Souvenir d'Italie** (Beraldi No. 5)
Etched about 1865.
Third State (of five states). Proof on Holland paper with the names of Cadart and Chevalier as publishers. From the John T. Wilson collection.

6 **Environs de Rome** (Beraldi No. 6)
Signed, in the plate, at the bottom to the left.
Etched about 1866.
Second State (of five states) Proof on Holland paper with the names of Cadart and Luquet as publishers.
From the John T. Wilson collection.

7 **Campagne boisée** (Beraldi No. 8)
Third state (of three states).
Proof from the collection of Jules Gerbeau.

8 **Dans les Dunes: Souvenir du bois de La Haye**
(Beraldi No. 9)

slow process of decomposition in the earth. Not much has been urged against cremation except that it is repugnant to long established custom, and that it would destroy the evidence of death by foul play. The doctrine of the resurrection of the body has also stood in the way of the adoption of the practice; but this objection was disposed of by Lord Shaftesbury's question, "What would in such a case become of the blessed martyrs?" It has been recognized from the beginning of the discussion that it must be practised by means of closed furnaces especially designed for the purpose, and experiments have been tried with many different processes. Dr. Polli, at the Milan gas works, used coal gas mixed with atmospheric air, applied to a cylindrical retort of refractory clay. Dr. Brunetti of Padua, the father of modern cremation, used an oblong furnace of refractory brick, with side doors to regulate the draught, and a cast-iron dome above, with movable shutters. He exhibited the results of his experiments at the Vienna exhibition in 1873. In the Siemens regenerative furnace only the hot blast is used, the body supplying hydrogen and carbon. A zinc coffin, to keep the ashes free from foreign substances, has been proposed. A cremation congress was held in Dresden in June, 1876, at which societies in all the principal countries of Europe were represented, and before which plans were exhibited for an elaborate cremation temple, containing a chapel, from which the body was to be lowered to the furnace room, and also long rows of urn houses or columbaria, in which the ashes should be finally stored.—The attention of English-speaking people was first drawn prominently to the subject by an article by Sir Henry Thompson in the "Contemporary Review" for January, 1874. A few months afterward the body of Sir Charles Dilke's wife was burned in Germany. The baron de Palm, at one time chamberlain to the king of Bavaria, a member of many distinguished orders, and in his younger days a member of the European diplomatic corps, died in New York in May, 1876. He had expressed a wish that his body might be burned, and it was accordingly embalmed to await the completion of a crematory, the erection of which Dr. F. J. Le Moyne of Washington, Pa., had begun, in order that it might be used on the occasion of his own death. It is a small, plain building of brick, roofed with iron, and cost complete $1,600. It contains two rooms: a reception room, with a table for the temporary resting place of the corpse and a columbarium, and a furnace room. The furnace is constructed on the Martin-Siemens principle, and consists of a structure of brick and fire brick, 10 ft. long, 6 ft. wide, and 6 ft. high, enclosing a semi-cylindrical retort of fire clay 7 ft. long, 24 in. wide, and 20 in. high, with its lid accessible from the outside at the door of the furnace. The body, laid upon an iron crate, is thrust into this retort after it has been heated to a white heat for 24 hours. At the back of the retort there is a vent through which the gas escapes into the furnace, where it is consumed. A fan blast is employed to produce the required degree of heat. Here the body of the baron de Palm was consumed on Dec. 6, 1876, in the presence of several scientific men and newspaper correspondents. The body, wrapped in a sheet, which had been saturated with alum to prevent its combustion before the furnace door could be closed, was placed in the retort at 8.30 o'clock. At 10.40 the process was pronounced practically complete, and at 12 the fires were drawn. The ashes were collected the next day, and placed in a Hindoo urn. The direct expense of the cremation, involving only the cost of 40 bushels of coke, is given as $7 04. The body of Jane Pitman, wife of Benn Pitman, the well known phonographer of Cincinnati, was burned at the same furnace on Feb. 15, 1878, in accordance with her wishes. The process was completed in 1 hour and 45 minutes. The furnace was afterward used, Oct. 16, 1879, for the incineration of the body of Dr. Le Moyne himself. He had been a man of great eccentricity and of considerable prominence in his state. He had twice been a candidate for governor of Pennsylvania, and his name had been given the second place on the national ticket which bore at its head that of Gerrit Smith. The same furnace was employed on Dec. 18, 1879, for the incineration of the body of Charles A. McCreery, a young man of 24, of Inwood, N. Y., the son of a wealthy New York merchant. In this case the process lasted 2 hours and 15 minutes, being retarded by the full suit of broadcloth in which the body was dressed. The ashes weighed about 5 lbs. The body of Miss Dolly Hartman, a school girl of Pittsburgh, was burned in this furnace on Feb. 7, 1880, and that of Dr. S. Hahn, a physician of New York, a month later. Many applications from living persons for its use upon their death have been made to those in its charge. The body of Dr. Charles F. Winslow was incinerated in a furnace built especially for the purpose, at Salt Lake City, on July 31, 1877. He was a distinguished physician of Utah, and had left instructions that his remains should be burned, from a horror of the slow process of decomposition and from his "reverence for the human body." The process lasted 2 hours and 35 minutes, and the ashes weighed 3 lbs. 8½ oz. The furnace was erected in the open air, and was taken down after it had been used. It was 11 ft. long, 4 ft. wide, and 5 ft. high, with two smoke stacks 20 ft. high, one at each end. It was built of ordinary brick, with a fire-brick lining. The chamber in which the body lay was half oval, 2 ft. high. It had a floor of solid iron three eighths of an inch thick, beneath which was the fire chamber. The flames and smoke passed along under the body to the foot, and back through the upper chamber to the main smoke stack, the other being used only when, by means of dampers, it was desired to shut out the flames from

the upper chamber, in order to view the body. The expense of this cremation was about $15. Mr. Julius Kircher, a chemist of New York, in the presence of two of his workmen, burned the body of his eight-day-old infant in one of his own furnaces, on Nov. 13, 1877. The body, which weighed 7 lbs., was enclosed in an iron flask, and it took the fire but 15 minutes to do its work. The result was 2½ oz. of clean white ashes. Seventy years ago a body was cremated in South Carolina, and again, in 1876, the corpse of Henry Berry of Marion co. was burned on a funeral pyre of logs, overlaid with kindling wood. Above the coffined body light wood was piled 14 ft. high. In the presence of 300 of Berry's neighbors and negro servants, the pile was lighted at 8 o'clock on the morning of July 18, and six hours afterward the bones were raked out of the coals.—Cremation has become so common of late years in Europe that it no longer attracts very marked attention. The modern period (without reference to such sporadic instances as the cremation of the body of the poet Shelley in Tuscany in 1822 by Lord Byron, Leigh Hunt, and Mr. Trelawny, in accordance with the law of the country regarding objects cast up by the waves) may be said to have begun with the burning of a woman's body at Padua in 1869. Two other instances occurred in that city the same year, and were followed by cremations at Milan in 1870, at Breslau and Dresden in 1874, and again at Milan in 1876. The time occupied in these cases varied from 45 minutes to 1 hour and 30 minutes, and the weight of the ashes from 3 lbs. 1 oz. to 6 lbs. The cost in one case was 60 cents, and in another $1. Milan has of late led the way, 16 cremations having taken place there in 1877. Among the bodies burned there in 1878 were those of a French lady and Sir Henry Crockenden of England. The first instance in Germany was the cremation of the body of Herr Stier, a civil engineer, at the cremation chapel in the new cemetery of Gotha, on Dec. 7, 1878. Here the ecclesiastical authorities have framed a cremation ritual. The furnace is of the Siemens pattern, and the expense is $7 14. The ashes can be removed in two hours after the completion of combustion; and indeed at the Gorini crematory in Milan, which burns wood, the ashes can be gathered into an urn in two hours from the time the body is placed in the furnace, at a total expense of about 75 cents; while the Le Moyne furnace takes many hours to cool, and requires an outlay of about $15. Cremation societies have been formed in most of the countries of Europe, and steps have been taken toward the erection of crematories in London and Paris and in the vicinity of New York. The adoption of the practice has been recommended by the municipal council of Berlin, approved by that of Paris, and legalized by the governments of Italy, Switzerland, and the municipalities of Vienna, Gotha, and other places in Germany. The Dutch society proposes to have a portable as well as a stationary furnace.—See Eassie's "Cremation of the Dead" (London, 1875).

CROQUET, the French name of a game that has been more or less popular in the United States for the past twenty years. The requirements for an enjoyable game are: a smooth, level lawn, about 20 by 30 yards; a set of rules to decide contested points; and a set of balls, mallets, stakes, and hoops. The best balls are made of boxwood or ivory, about 3½ in. in diameter, and painted in various ways to distinguish each ball and its order of play. The mallets are of box or ivory, with shafts of ash or cane. The shaft is carefully tapered from the upper to the lower end, where it should be five eighths of an inch to allow spring enough to give a good stroke. The game is sometimes varied by crossing a pair of hoops in the centre of the field; this is called a cage, and is run by the ball passing through both wires in any direction. If a bell is hung from the arch, it must be audibly rung before the cage is considered run. There are several ways of arranging the hoops on the field; the three shown in the accompanying diagram are the most in vogue. The figures indicate the order in which the hoops are run; those in brackets are made in returning to the starting post.—The following are the technical terms of the game:

Roquet, to hit another ball. To make a rushing roquet is to hit another ball with force sufficient to move it onward.

Croquet, to strike one's own ball when in contact with another, after the roquet.

Player, when applied to the balls, means the adversary's ball which will play next. It is sometimes called the live ball.

Dead ball, the adversary's ball which has just finished playing.

Making a hoop is getting through it.

Slave. To slave or make use of a ball is to take it on with you in the game, roqueting it after each hoop. The term to "make use of" is generally applied to one's friends, and "slave" to one's adversaries.

To take two off is that sort of croquet in which you only just move the ball from which you are taking croquet.

A split shot is where, in taking croquet, you drive your ball in one direction and the one from which you are taking croquet in another.

To position a ball is to place it for its hoop.

To be wired is to have your ball in such a position that you cannot hit some other ball or get through your hoop, because of a wire intervening.

To be blocked is to have some ball you have just played on (and cannot therefore take croquet from again) lying between you and another ball, or between you and your hoop.

To get a rush on a ball is to have placed your own ball near it, and in such a position that you can roquet it to that part of the ground where you wish it to lie.

Rover, a ball that has gone through all its hoops, and is ready to go out.

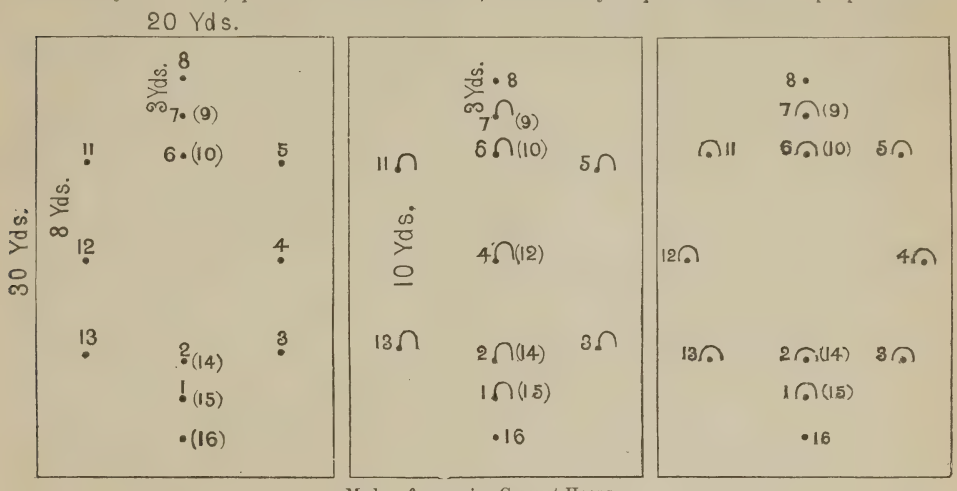
In hand, a ball which has just roqueted another and has not taken croquet.

In order, a term applied to that hoop or peg which the player has next to make.

In play. A ball is in play as soon as it has run the first hoop; it continues in play till it makes roquet, when it is in hand. A ball in hand must take croquet, and can score no point till it has done so. Having taken croquet, it is again in play, but it is not permitted to roquet again any ball it has croqueted for the remainder of its turn, unless it makes another point. Having made another point, it is in play again to all the balls, as at the beginning of its turn.

Definitions of Points and Strokes.—The points of the game are running a hoop or cage, or hitting a peg, each in order. A hoop is run when a ball in play has passed through it in the right direction at least so far that a straight edge (the

handle of the mallet, for example), applied behind the hoop, does not touch the ball. In testing the running of the cage, which may be run in any direction, provided that the ball runs through both wires, a straight edge is applied on the inner side of the two legs through which the ball has just passed. Hoops or pegs accidentally displaced from the perpendicular



Modes of arranging Croquet Hoops.

may be set straight at any time. A second roquet in one turn, without a point made in the interval, does not count; but it may be made for any purpose, such as cannoning, driving away, &c., the player's turn ending there, unless by the same stroke he makes a point or roquets another ball which he has not roqueted before during the turn. A croquet is taken by placing the ball of the player in contact with the one roqueted; the player then strikes his own ball with the mallet, after which he is entitled to another stroke. A croquet may be taken either tight, loose, or rolling. A tight croquet is made by placing the ball of the player close to that roqueted; then, fixing his own ball with his foot, he strikes it, driving the other ball away, but keeping his own under foot. If the ball slips from under the foot, the stroke following the croquet is forfeited; this is called a "flinch." A loose croquet is made by placing the player's ball in contact with that roqueted, and striking the former without the foot on it. A rolling croquet is effected by placing the two balls in the same way as in loose croquet, but after the initial stroke is fairly made the mallet is allowed to follow the ball through without hitting it again. Spooning is a pushing stroke, causing no noise as of a tap to be heard.

Rules of Croquet.—1. It shall be decided by lot which side shall play first, and the captain gaining the toss takes either the light or dark balls, his opponent having the others. Blue then leads off, followed in rotation by the other colors, till his turn comes round again.

2. The first stroke of each ball is made by placing it half way in a straight line between the peg and the first hoop, and striking it through that hoop. If this point is made, another stroke is allowed; but if it fails, the ball is taken off the ground till its next turn comes round, when it starts again as at first.

3. After the first hoop is passed, the player of the ball running it can go on with his play so long as he succeeds in either running a hoop or cage, or hitting a peg, each "in order," and with his ball "in play," or makes a roquet on any ball "in play." When the turn comes round again, it is optional for the player to "place" his ball, or to begin by playing either for a roquet or a point.

4. If a player roquets a rover against the winning peg, he cannot take croquet, as the other ball is out of the game, and he loses his turn.

5. A ball "in play," driven through its proper hoop or cage, or hitting a stick "in order," by any stroke, whether of the same side or that of its antagonist, counts that hoop, cage, or peg. If a ball after roqueting another, and before taking croquet, makes a point or a second roquet, it is not entitled to the point or second roquet, as it is then "in hand." If two balls are roqueted simultaneously, the player may take his choice for croquet. After a ball has roqueted another, it may be stopped while in motion by the umpire or any of the players; but should it, before being stopped, roquet any other ball, the latter must remain where it lies after such displacement, but cannot count any points so made. If a ball, while passing through a hoop, roquets another before the former is entirely through, the hoop does not count, and the croquet must be taken. If a ball, in being driven back through a hoop the reverse way to which it is going "in order," rests under it, it is not entitled to run that hoop if a straight edge applied on the side of the hoop from which it comes touches the ball.

6. All strokes must be given by the player standing so that, in striking his ball, the course of the mallet shall be across the body, from right to left, or from left to right. Either one or both hands may be used, but the one nearest the head of the mallet must be 12 inches from it.

7. The side of the head of the mallet is not to be applied to the ball in striking it, under any circumstances; if so used, the stroke is forfeited, and any balls are to be replaced to the satisfaction of the adverse captain.

8. If, when about to play, a player finds his ball touching another, he must at once take croquet off it.

9. A rover has a right to roquet or croquet any ball once only during each turn; having passed all the hoops, it has no point allowed for running one. It is subject, on the other hand, to be roqueted or croqueted by any other ball "in play." If this causes it to strike the winning peg, the rover is out of the game, and must be removed from the ground.

10. A ball struck beyond the limits of the ground must at once be replaced a mallet's length within the edge, measured at right angles to the margin, from the spot where it went off.

11. Every player, on being appealed to, shall declare which is his next hoop "in order;" and, before playing, every player may demand from the captain of the opposite side which is his proper hoop "in order;" and should any dispute arise, it must be settled by the two captains or their umpire.

12. The penalties of the game are as follows: *a*. If a player in making a tight croquet allows his ball to slip from under his foot, he loses his next stroke. *b*. If, in taking "two off"

a ball, he fails to move it, he loses his next stroke. *c.* If any ball, when in play and rolling, is stopped or touched by the hand, foot, dress, or mallet, or by any other substance held by a player, it shall be for the side opposed to that player to determine whether the ball shall rest where it was stopped, or the stroke be taken again. *d.* If, in striking at his own ball, the player, either before or after the blow is actually given, hits another ball with his mallet, he loses his present turn, and the ball improperly hit is replaced to the satisfaction of the adverse captain. *e.* If a ball, not being hit sufficiently hard, is hit a second time, the stroke is forfeited, the balls are to be replaced to the satisfaction of the adverse captain, and the player loses his turn. *f.* If a player plays out of his turn in rotation, whether with his own ball or with any other, and the mistake is discovered before the next player has begun, all benefit from any point or points so made is lost; all balls hit are to be replaced, or left where they are struck, at the option of the adverse captain; and the person who should have played takes his turn. But if the mistake is discovered after the next player has taken his first stroke, the turn played in error must be allowed to stand; and if played with the wrong ball, the player's ball and the one he played with are to be transposed. *g.* If a player in his proper turn plays with the wrong ball, he loses all benefit from that stroke; the ball or balls are replaced, and the turn is lost. Should the error not be discovered before he has made a second stroke, the strokes are valid, and the player continues as if no mistake had been committed. At the end of the player's turn, his own ball and the one he played with are to be transposed from one position to the other, and in their next turns the players play with their right balls, in the same rotation as if no mistake had occurred. *h.* If a player croquets a ball which he is not entitled to croquet, he loses the remainder of his turn, and the ball or balls moved by such croquet are to be replaced to the satisfaction of the adverse captain. If the error is not discovered before the player has made his next stroke, the croquet is valid, and the player continues his turn as though no blunder had been made. *i.* If a ball is not fairly hit, but, in the opinion of the captains or their umpire, is pushed or "spooned," all benefit from that stroke is lost; the ball must be replaced to the satisfaction of the adverse captain, and the player loses his turn. *j.* If in taking aim the player moves his ball six inches, it must be considered that he has taken his stroke.

CUSHING, William B., an American naval officer, born in Wisconsin, Nov. 24, 1842, died in Washington, D. C., Dec. 17, 1874. He entered the naval academy at Annapolis in 1857, from New York, but was deficient in his preparation, and resigned in 1858. He joined the navy as a volunteer in 1861, and on the day he entered the service, being then an acting midshipman, he captured a tobacco schooner, the first prize of the war. He was attached to the north Atlantic blockading squadron for the four years 1861–'5, was commissioned lieutenant in July, 1863, and repeatedly distinguished himself by acts of perilous adventure. In November, 1862, being in command of the steamer Ellis, he was ordered to enter New River inlet, capture the town of Jacksonville, intercept the Wilmington mail, and take any prizes he could find. He captured 25 stand of arms, a large mail, and two schooners, and shelled a confederate camp on his way back. It was impossible to get over the bar that night, and in the morning the Ellis got aground. Everything was removed from her but the pivot gun and a few small arms, and the crew were put on board one of the prizes, except six volunteers who remained with Lieut. Cushing to man the one gun. The next morning the enemy opened a cross fire on the Ellis with large rifled guns, and disabled her. Cushing then set her on fire, and with his companions rowed a mile and a half under a heavy fire to the schooner. Reaching her in safety, he made sail for sea, and four hours later was at Beaufort. In 1864 he was offered the dangerous task of blowing up the confederate ram Albemarle, which had been built expressly to drive the federal fleet from North Carolina waters, and was then lying at Plymouth. Recognizing the slight chance of returning alive, whether he succeeded or failed in his undertaking, he first visited his Massachusetts home and bade his friends good-by. On the night of Oct. 27 he proceeded up Roanoke river in a torpedo boat, towing a cutter, and passed the confederate steamer Southfield without being noticed. When he got near enough the Albemarle to be discovered, he cast off the cutter, ordering her to attack the Southfield. The Albemarle was completely surrounded by a wide raft of heavy logs; but Cushing, who had his torpedo on the end of a boom projecting from the bow, succeeded in driving his boat over the logs far enough to enable him to lower the torpedo under the ram, which he did, and the explosion destroyed her. At the same moment a gun bearing on the torpedo boat was discharged, and she instantly filled. Cushing called to his companions to save themselves, threw off a portion of his clothing, and jumped overboard. Of the party, some were drowned, others were captured, and only two escaped. The lieutenant, after passing most of the night in the water, reached the shore in an exhausted condition, and travelled barefooted through the swamps for some hours until he reached a creek. There he found a picket boat belonging to the enemy, with which on the night of the 28th he made his way out to the blockading fleet. For this feat he was thanked by congress and promoted to lieutenant commander. He had also distinguished himself by brilliant operations on the Nansemond, Cape Fear, and Little rivers, and elsewhere, and by leading the men of the Monticello in the attack on Fort Fisher; and when Secretary Welles wrote him that the exclusive credit of the Albemarle's destruction belonged to him and his brave comrades, since the details of the plan had been left to him to perfect, he added: "On four previous occasions the department has had the gratification of expressing its approbation of your conduct in the face of the enemy, and in each instance there was manifested by you the same heroic daring and innate love of perilous adventure; a mind determined to succeed and not to be deterred by any apprehensions of defeat." Lieut. Cushing gained as high reputation for ability and good judgment as for gallantry. In 1866–'7 he served on the Lancaster, the flag ship of the Pacific squadron, and in 1868–'9 he commanded the Maumee, of the Asiatic squadron. He was commissioned a commander in 1872, and at the time of the threatened difficulty with Spain was ordered to the command of the Wyoming. He died of brain fever at the government insane asylum. Two of his brothers were killed in battle, one during the civil war, and one by the Apaches.

CUSTER, George Armstrong, an American soldier, born at New Rumley, Harrison co., Ohio, Dec.

5, 1839, killed in battle with the Sioux on the Little Big Horn, June 25, 1876. He graduated at West Point in 1861, and, as second lieutenant of a company of United States cavalry, was present at the first battle of Bull Run. After McClellan took command of the army, Lieut. Custer was placed on the staff of Brig. Gen. Kearny; but he soon left to join his company at Manassas, after its evacuation by the confederates. Here he made his first cavalry charge, in which he drove a confederate force across Muddy creek. When the army of the Potomac encamped before Yorktown, Custer was detailed as assistant engineer of the left wing, under Sumner. He planned and erected the earthworks nearest the enemy's lines, and accompanied the advance under Gen. Hancock in pursuit of the enemy from Yorktown. When the army reached the Chickahominy, he was the first to cross the river, and he was soon after made captain and one of Gen. McClellan's aides. In this capacity he served during most of the peninsular campaign, and took part in all its battles. He was also engaged in the campaign which ended in the battles of South Mountain and Antietam. He took part in the battle of Chancellorsville, and became aide to Gen. Pleasonton, then commanding a division of cavalry. In this capacity he distinguished himself as a dashing cavalry officer in several contests. He was made brigadier general of cavalry, and rendered important service in the battle of Gettysburg, where he routed Hampton's cavalry, and had two horses shot under him. He took part in the battles of the Wilderness in 1864, and his brigade led the column in Sheridan's raid toward Richmond. He rendered important service in the battle of Fisher's Hill, after which he remained in command of a division until Lee's surrender. For his services in the battle of Cedar Creek he was brevetted major general of volunteers. When the confederates fell back to Appomattox, Custer led the advance of Gen. Sheridan's command. In July, 1866, he was made lieutenant colonel of cavalry in the regular army, with the brevet rank of major general, and was sent to the western frontier. Operations against the hostile Sioux were begun early in 1876. On the 22d of June Custer, with his whole regiment and a considerable number of scouts and guides, passed up the Rosebud river 20 miles, struck an Indian trail, and followed it to the Little Big Horn, where he found a large settlement. He divided his command, and at the head of five companies attempted to ford the river at a point three miles further down. This led to a battle, in which Custer and his immediate command were surrounded by nearly 3,000 warriors, and every man of them was slain. Little is known of the circumstances of the fight. A volume of his sketches in the Indian country, entitled "My Life on the Plains," was published in 1877, and "The Life of General George A. Custer," by Frederick Whittaker, in 1878.

DAKOTA, a territory of the United States, bounded N. by British America, E. by Minnesota and Iowa, S. by Nebraska, and W. by Wyoming and Montana; area, 147,700 sq. m. The population in 1860 was 4,837; in 1870, 14,181; in 1880, 135,177, of whom 83,382 were native and 51,795 foreign born; in 1883, estimated at 300,000. The capital is Bismarck. The territory is divided into about 100 counties, of which 50 are organized. It may be classified into three great agricultural divisions. The southeastern portion, as far north as the 44th degree of N. lat., running west to the 24th degree of lon. W. from Washington, is peculiarly adapted to corn and general farm products, with the exception of wheat, which sometimes blights during the extreme heated term. Cattle, swine, and sheep husbandry has proved very successful in this section of the territory. The section of country lying W. of the 24th degree of lon. W. from Washington, embracing the great Sioux reservation and the Black hills mining region, although not yet fully open to agricultural development, seems destined to become very fertile. The region especially adapted to the raising of wheat and other cereals may safely be said to begin at the 44th degree of N. lat., extending northward and becoming more certain of a full and abundant harvest, without any failure of a crop until the extreme northern portion of the territory is reached. The severe frosts in winter sometimes extend 5 or 6 ft. into the earth in the northern portion of the territory, and remain at the lowest point reached until the scorching rays of the sun gradually draw up their cool moisture to the roots of the wheat stalk, and the cool winds, which always occur in the Red river and other northern valleys, so completely protect the berry while in the milk that no blight or failure to ripen the full, plump kernel has occurred in what is known as the wheat belt. Nearly all varieties of farm products are raised successfully in northern Dakota, with the exception of corn, which is the staple production in the southern portion of the territory. Wheat culture, however, insuring certain and immediate returns, takes the lead. The Black hills region embraces the counties of Lawrence, Pennington, Custer, and Mandan. Some of the largest and most expensive mining machinery in the country is in successful operation in Lawrence county, and the annual yield of gold and silver continues to increase. It has become well settled, however, that all low-grade ores can only be worked successfully when found in large bodies and handled with heavy and very expensive machinery. Hence the mining interest in Dakota is gradually centring in the hands of wealthy companies, thereby consolidating many of the best mines under one management. The territory has a hospital for the insane, a penitentiary, and a school for deaf-mutes. There are three collegiate institutions: the agricultural college, at Brookings; Dakota university, at

Vermilion; and Yankton college, at Yankton. There is one normal school in operation. The school revenues for 25 counties for the year ending March 31, 1882, amounted to $363,620, raised almost wholly by direct taxation. Reports from the remaining counties would have raised this amount, it is estimated, to $500,000. Reports for the same period from 33 counties of the 46 from which reports were due show 1,225 school districts organized, 40 graded schools, 965 ungraded schools, and 799 school-houses, valued at $525,877. The assessed value of property in the territory aggregates about $50,000,000. The receipts into the territorial treasury for the two years 1881 and 1882 amounted to $314,878; disbursements, $271,414.10; balance, $43,463.90. The territorial debt is $90,000, consisting of 6 per cent. bonds issued for the construction of the insane hospital and penitentiary. According to the census of 1880, the value of farms was $22,401,084; bushels of barley raised, 277,424; Indian corn, 2,000,864; oats, 2,217,132; wheat, 2,830,289; Irish potatoes, 664,086; hay, 308,036 tons; value of live stock, $6,463,274; number of horses, 41,670; working oxen, 11,418; milch cows, 40,572; other cattle, 88,825; sheep, 30,244; swine, 63,394; estimated value of all farm productions, $5,648,814; value of manufactures, $2,373,970; gold mined, $3,305,843.—The following table gives the mileage of railroads in the territory at the beginning of 1882:

COMPANIES.	Miles.
Chicago, Milwaukee, and St. Paul	597
Chicago and Northwestern	335
Chicago, St. Paul, Minneapolis, and Omaha	55¼
Deadwood and Woodville	9¼
Northern Pacific	389
St. Paul, Minnesota, and Manitoba	210
Casselton branch (Northern Pacific)	43
Total	1,639

—Bills have been introduced in congress providing for the admission as a state of the southern portion of Dakota. See map in supplement to Volume XI.

D'ALBERTIS, Luigi M., an Italian naturalist, born about 1840. He spent several years on the island of Papua (New Guinea), and acquired an intimate knowledge of the character and customs of the natives. He was attracted toward Papua as the home of the bird of paradise, and first arrived there in company with Dr. Beccari in 1872. Ascending the Arfak mountains, he was the first European who studied this beautiful bird in its native woods. During this visit he became familiar with the nature of the Papuans, acquired their language, and was the first foreigner who won their respect and affection. He made a second visit to Papua in 1875, establishing himself on Yule island near Point Moresby. The following winter he joined a British missionary expedition up the Fly river, which was obliged to return after ascending it a short distance. In 1876 he undertook the exploration of the river alone, in a steam launch, and succeeded in reaching its head waters, 500 miles from the mouth. In 1877 he ascended the river again to the mountains in which it rises; but, attacked by the savages and deserted by most of his crew, he was unable to cross the mountains. He has published "New Guinea: what I Did, and what I Saw" (2 vols., London, 1880).

DARBY, John Nelson, one of the founders of the sect called Plymouth brethren, born in London, England, in 1800; died near London, April 28, 1882. His father was a lawyer, and after his graduation at Trinity college, Dublin, in 1819, the son was called to the bar. He was suddenly converted, and entered the ministry of the established church; but in 1832 he left it in consequence of his doubts as to the validity of holy orders and of any ecclesiastical organization. From that time he prosecuted with great zeal a ministry at large in connection with the Plymouth brethren, lived for several years upon the continent, and traveled extensively. He built up congregations in many places, the members of which are commonly called Darbyites. He preached and wrote in French and German, as well as in English, and edited or made translations of the Bible into German, French, and English. His collected writings comprise 32 vols. See PLYMOUTH BRETHREN.

DARK DAYS, certain days recorded in history on account of unusual obscurations of the sun, some of which have been attended with phenomena which, through the rarity of their occurrence, still remain among the problems of meteorology. In the middle ages an extraordinary occultation was immediately attributed to supernatural causes, just as a fall of rain laden with the pollen of the pine, birch, elder, or lycopodium was deemed a portentous shower of brimstone, or, if colored with infusorial or fungoid growths or earthy matter containing peroxide of iron or hydrochlorate of cobalt, was dreaded as the expression of divine wrath in a rain of blood. During the latter part of the last and the beginning of the present century, in the times of Franklin, Humboldt, and Arago, the bold pioneers of modern science carefully studied cosmical and volcanic forces, and made the unusual occultations of the sun which could not be accounted for by ordinary meteorological causes (some remarkable instances of which occurred at this period) the subject of extensive speculations. Just as pestilential diseases were supposed to be occasioned by foreign gases imported into the earth's atmosphere when a comet's tail sweeps its surface, so these problematic phenomena were readily ascribed to the grandest, though not the most improbable, causes.—Many stormy and foggy days have been recorded in modern times, on which it was necessary to light candles at midday, and impossible to travel the roads, yet which are fully explained by the known facts of meteorology. Such were the 9th of August, 1732, when New England was enveloped in darkness; the dark day in England in 1678; the 1st of January, 1807,

when the sun was hidden by clouds in Essex co., England; the 1st of October, 1816, another dark day in England; the 21st of the same month in New England, when candles had to be lighted at noonday; the 16th of October, 1783, when the blackness of night settled over Canada, followed by thunder showers and a hurricane; and numerous others. The gloom that overhung the city of London on the 10th of May, 1812, was supposed to have been caused by smoke suspended in a stagnant atmosphere. On the 27th of December, 1813, and for several succeeding days, the fog was so thick in and about London that traffic was impossible; it was followed by heavy snow and a winter of uncommon rigor. One of the most noted instances of the obscuration of the sun from meteorological causes was the famous dark day in New England, May 19, 1780. The gloom was most intense in New Hampshire and Maine. It was necessary to light the candles in the houses throughout New England. The Connecticut legislature adjourned on account of the darkness. The sky was overcast with a thick layer of low-lying cloud. Dr. Samuel Tenney describes this cloud as having an uncommon brassy hue. The night following was intensely black.—The famous dry fog of 1783, when through the whole of Europe the light of the sun was partly shut out by a bluish haze for many days, gave rise to more scientific discussion and theorizing than all the other historical dark days together. What is called a dry fog (in German, a *trockener Nebel* or *Landrauch*) is no unusual occurrence in northern Germany and Holland. It has been attributed by Finki, Kämtz, and other meteorologists to the burning of peat bogs, being coincident in those countries with the burning of the peat by the peasants in the autumn. Sometimes forest fires add their smoke to the fumes from the peat, as in the case of the very thick dry fog of 1834. A similar dry and hazy state of the atmosphere occurs at the same season in the United States, and was formerly more marked when forest and prairie fires to which it is attributed were more frequent and extensive. The less speculative of meteorologists have accounted for the dry mist of 1783 in the same way. A dry haze is common in Switzerland, frequently hiding the Alps from view during the season of fine weather which accompanies the winds from the north and northeast; it appears as a gray or ruddy vapor surrounding the horizon, across which the sun shines with a dim and lurid light. This phenomenon is called the *hâle*. In Spain a dry mist called the *callina* prevails during the summer months, when the weather is fine. Humboldt noted a similar haze on the western shores of Mexico, and remarked while on the summit of the Silla, in Peru, 8,000 feet above the sea, a phenomenon more directly analogous to the great *brouillard sec* of 1783: a mist rose which obscured the nearest objects from his vision, yet to his surprise no moisture was felt, and a glance at the hygrometer revealed the extreme degree of dryness. The dry fog of 1782 and 1783 is described by Dr. Prout, in one of the "Bridgewater Treatises," as a remarkable haze, which when seen in mass was pale blue, covering the whole of Europe. Heavy winds and rains, occurring during its continuance, had no effect upon it. It was thickest at midday, and through it the sun appeared red. The haze is said to have possessed remarkable drying properties, and to have been attended with an occasional peculiar, penetrating odor, depositing in places a viscid liquid of an acrid taste and disagreeable pungent smell. After its dispersion severe thunder storms prevailed. During the years in which this phenomenon occurred, an epidemic catarrh of great severity, affecting animals as well as mankind, prevailed throughout Europe. About the time of the dry fog volcanic disturbances and eruptions of unusual violence occurred both in Italy and Iceland. The dry fog of 1783, which lasted more than a month, enveloping the whole of Europe and northern Africa in darkness, appeared at Copenhagen May 24, at La Rochelle June 6, at Mannheim and at Rome on the 16th, at Geneva on the 17th, at Havre, Paris, and Göttingen on the 18th; and before the end of June it was at Moscow, Berlin, and Pesth, in Syria and central Asia, and was even observed over a great part of North America. The highest summits of the Alps were found by De Saussure, Lamanon, and Senebier to be covered by it. While it lasted, there were 23 days of rain and 12 storms of wind, but these showed no signs of dispelling it. Senebier described it as a bluish mist, which changed to a reddish color, but never gray. The sun was not visible until it had risen more than 12° above the horizon. On the days when the mist was densest, the hygrometer indicated the greatest absence of moisture. Murcorelle detected in the air the acrid odor of smoke, and Van Swinden sulphurous fumes which irritated the throat. It lasted about a month at Paris, Stockholm, and Geneva; but at Padua it did not disappear for two, at Rome for three, and at Copenhagen and Mannheim for four months. A similar dry mist was observed in 1831, appearing on the coast of Africa the 3d of August, at Odessa the 9th, in France the 10th, and in the United States the 15th. It shaded the sun to such an extent that it could be seen with the naked eye. At night it sometimes cleared away sufficiently to let the rays of the stars penetrate. Observers in Algiers, France, and America declared that the sun's disk appeared sometimes of an azure-blue, and sometimes of an emerald-green color. Excessive dryness of the atmosphere characterized this fog as well as that of 1783. It was attended by a phosphorescent luminosity which permitted observers at Berlin, Genoa, and in Siberia to read fine print at midnight. Lalande attributed the mist of 1783 to the quantity of

electricity developed during a very hot summer which succeeded an uncommonly moist winter. Cotte regarded it as formed of metallic emanations, united with electricity, in consequence of remarkable heat and numerous earthquakes. Several other natural philosophers connected it with electricity, of the nature of which they were much more ignorant than the scientists of to-day. Veltmann showed that the phenomenon was concomitant with extensive peat fires in Westphalia. The hypothesis of Benjamin Franklin was much thought of at the time. He considered that the mist might have been occasioned by the partial combustion of an immense bolide or meteoric globe passing through the earth's atmosphere, and giving out immense volumes of smoke, as is the case always in imperfect combustion.—The cause of the dry mist, or *brouillard sec*, if it is not to be sought in the suspension of aqueous vapor or smoke from conflagrations in the higher atmosphere, must be attributed to terrestrial dust, or to volcanic or cosmic matter held in the air. The action of storms in drawing up terrestrial dust and other matter, and conveying it sometimes to great distances, is well known. In the beginning of February, 1851, a French physician, Dr. Reverdit, observed at Draguignan, about 40 miles northeast of Toulon, after an exceedingly heavy rain and hail storm, accompanied by thunder and lightning, a dense mist that deposited reddish calcareous matter of a sweet taste, which he took to be dust caught up from the plains not far distant by the hurricane and held suspended in the upper regions of the atmosphere during the rain storm, which lasted two days. Colored snow is not infrequent in Italy, the Alps, and the Pyrenees. Famous red rains fell at Constantinople in 852, at Brixen in 869, at Bagdad in 929, at Viterbo in 1219, in Bohemia in 1416, in Westphalia in 1543, at Emden and Louvain in 1560, at Strasburg Aug. 12, 1623, at Brussels Oct. 6, 1640, and at Venice in 1689. The same phenomena occurred near Genoa in 1744; at Cleves Oct. 9, 1763; in Picardy Nov. 14, 1765; in Italy March 5 and 6, 1803; in the valley of Oneglia, near Nice, Oct. 28, 1814; and at Giessen May 3, 1821. A yellow rain which fell in the department of the Drôme, France, in October, 1846, drove the wild fowl into the villages and houses; it contained silica, alumina, peroxide of iron, carbonate of lime and of magnesia, and organic matter. The storm which conveyed these substances is said to have originated in South America, and Ehrenberg detected in the organic matter infusorial forms peculiar to Guiana. The coloring matter found in red and green snow is often given to it by certain infusorial and fungoid growths. The rains of clotted blood which struck terror into the Christians of former centuries contained these or inorganic substances colored with peroxide of iron or chlorhydrate of cobalt, and the showers of brimstone were colored with the pollen of certain trees. The spawn of fish and reptiles and many other substances have been conveyed to considerable distances by storms; the lakes in the Pyrenees, after drying up in summer, are restocked with fish by this means. The dust showers in the Atlantic ocean, in the vicinity of the Cape Verd islands—a phenomenon which has drawn the attention of Ehrenberg, Kämtz, Arago, Darwin, Maury, and others—have been recently made the subject of an exhaustive investigation by Dr. Gustav Hellmann, a meteorologist of Berlin, who from the details of 65 of these dust storms, observed from over a thousand English ships between the years 1854 and 1871, in the region between lon. 10° and 40° W. and lat. 20° N. and 10° S., concludes, in opposition to the opinions of Ehrenberg and Maury, that the dust comes from the Sahara desert, which accords with the microscopic examinations of Sorby and Tissandier.—The hypothesis that the dry mists are produced by volcanic matter emitted from the bowels of the earth was supported in a remarkable manner by circumstances attending the fog of 1783. The earthquake which took place in Calabria that year was of sufficient violence to change the whole character of the country, even moving mountains out of place; and in the eruptions in Iceland 17 villages were consumed. About the time when several of the dry mists noted in history occurred, as in the years 526, 1721, 1822, and near the time of the fog of 1834 also, unusual volcanic disturbances took place; yet these at times were preceded instead of being followed by the fog. The effect of violent volcanic eruptions in obscuring the atmosphere for great distances has been observed in several instances. During the eruption of Vesuvius in which Pompeii was destroyed, all Italy was overhung with a pall of darkness. In 1794 an eruption of Vesuvius enveloped the whole of southern Italy in obscurity. In 1812 an eruption in the island of St. Vincent produced profound darkness at Barbadoes. Earthquakes are frequently attended by severe storms, a circumstance which strengthens the position of those who attribute many of the dark days to volcanic causes. The severe earthquake which took place in Peru Dec. 2, 1877, was preceded by a period of intense darkness caused by thunder clouds, which burst immediately before the shocks began, and was followed by unexampled storms and inundations.—The last supposition, by which the dry mists are ascribed to cosmic causes—to cosmic dust brought into the atmosphere of the earth and held in suspension, or to the partial ignition of meteorites, according to Franklin's hypothesis—is supported by the evidence of several remarkable disturbances of nature, of which more or less authentic historical accounts are preserved. Procopius relates that in 472 a rain of black dust fell in the vicinity of Constantinople, during which the sky seemed to be on fire. This phenomenon must be traced to a cosmic origin, unless it can be supposed that the glowing cin-

68 **Vue prise en Angleterre** (Delteil No. 5)
Original Lithograph. Second state.

69 **Bords de la Somme** (Delteil No. 6)
Original Lithograph. First state.

70 **Vue prise a Alençon** (Delteil No. 7)
Original Lithograph. First state.

DAUBIGNY, CHARLES FRANÇOIS

Born in Paris, February 15, 1817. Died there, February 20, 1878.

"Thirty years have passed since Daubigny laid down his brushes and etching-needle forever. Yet his fame has broadened year by year, and his works have kept their place among the classics in Art. They have neither grown old nor old-fashioned, but still convey with perennial freshness the master's delight in the springtimes, summers, autumns, and winters that greeted his painter's eye and poet's soul as he passed through the world.

"That his etchings are not more widely known thus far, is perhaps partly accounted for by the fame of the painter having obscured that of the etcher, as well as by Daubigny's own absolute disregard for worldly gain. He employed no tricks to attract public attention, nor did he seek to tempt the collector by any undue multiplication of 'states.' Yet, as painter and etcher, none of the Barbizon men surpassed him in the freshness of his own rustic and riverside vein. It seems almost a presumption to praise him, since his fame is well-nigh universal, and those best qualified to judge concede his etchings of the purely rustic phases of landscape to be unexcelled.

"Daubigny lived from 1817 to 1878, and like a true artist reflected the spirit of his time. In passing over a list of his etched work, his career can be followed more closely than by the many unrecorded paintings scattered hither and thither through the world's collections. We find the sentiment of the romantic period in France suggested both by the titles and treatment of his earlier plates. Then come the results of those fruitful trips to the Morvan and the Dauphiné towards 1850, and later the subjects inspired by the banks of the rivers Oise and Seine, or by the coast-life at Villerville in Normandy, where

Daubigny spent several summers. Trips to London and Holland also added their quota. Auvers and its Plain furnished him many subjects, and Valmondois nearby, among other *motifs*, that of his early etching *The Village Wedding*, and his latest plate *Moonlight at Valmondois*. The vastness of the mountains and the wildness of the deep forest appealed to him less than the life of the fields, the rivers and the corners of orchards. In a letter written after his visit to Cauterets in the Pyrenees for the benefit of his health in 1872, he says, 'I was not able to work during the several excursions made in the neighborhood, where it was very beautiful. One is so surprised by these grand aspects that it would be necessary to remain a long time before finding the interpretation capable of rendering them. I am going to finish the season at Auvers. There is nothing like one's natural every-day surroundings in which to take pleasure. The pictures we then do, feel the effects of our home-life and the sweet sensations we experience in it.'"

Robert J. Wickenden.

71 Le Lever du Soleil (Henriet No. 61)

Daubigny painted in 1873 a picture after this beautiful etching.

Proof on India paper. From the Louis Galichon and Gerbeau collections.

72 Chevaux de Halage (Henriet No. [illegible])

Proof on India paper.

73 L'Ane a l'Abreuvoir (Henriet No. 6[illegible])

An aquatint. Proof on India paper.

74 L'Automne: Souvenir du Morvan (Henriet No. 6[illegible])

Proof on India paper.

"*Une des plus chatoyantes pièces de l'œuvre Daubigny.*" Henriet.

75 Le Satyre (Henriet No. 67)

"A Soft-ground" etching. Proof on India paper. From the Louis Galichon and Gerbeau collections.

ders of Vesuvius were by some means transported 700 miles through the air. A reddish substance was precipitated in Thuringia in 1848, which was preceded by the appearance of a globe of fire in the heavens. A luminous meteor exploded near Heidelberg in 1811, and a gelatinous substance was precipitated to the earth. The fall of a reddish matter at Cape Verd was accompanied by thunder peals and lightning flashes. In the midst of dust rains in Styria in 1618, in Calabria March 13 and 14, 1813, and in India Nov. 5, 1814, meteorites fell to the earth.

DAUBIGNY, Charles François, a French painter, born in Paris in 1817, died in 1878. He was a pupil of Delaroche, and afterward studied for three years in Italy. He began to exhibit in 1838, and was well patronized by the government under the empire. The ministry of the interior purchased his "Banks of the River Oullins," "The Seine at Charenton," "The Island of Bezons," and "The Seine at Bezons." Napoleon III. bought his "Pool of Gylien," and he was employed to decorate the staircase and two panels in the apartment of the ministry of state at the Louvre; the staircase pictures being "The Pavilion of Flora" and "The Palace and Gardens of the Tuileries." His other works include "The Harvest," in the Tuileries; "A View on the Banks of the Seine," in the museum at Nantes; "A View in the Valley of Optevoz" and "Springtime," in the Luxembourg; "The Rising of the Moon," "A View at Dieppe," "An Orchard," "The Fields in June," and "The House of Mother Bazot at Valmondois." Daubigny also made more than a hundred etchings.—His son, KARL PIERRE, exhibited at Philadelphia, in 1876, "The Valley of Pourville, Normandy."

DAVENPORT. I. Edward Loomis, an American actor, born in Boston in 1816, died in Canton, Pa., Sept. 1, 1877. In 1836 he made his début at the Lion theatre, Providence, as Parson Will in "A New Way to Pay Old Debts," with the elder Booth as Sir Giles Overreach, a part in which Davenport afterward became famous. He first appeared in New York at the Bowery under Hamblin's management, and in Philadelphia in 1838, at the Walnut Street theatre, as Count Montalbin in "The Honeymoon." He was connected chiefly with Boston theatres until he went to England in 1847 with Mrs. Anna Cora Mowatt, and appeared with her at Manchester as Claude Melnotte. While in England he supported Macready for two seasons, and was very popular as William in "Black-Eyed Susan," at the Haymarket. He did not return to the United States till 1854. Afterward he filled various engagements with Wheatley, Wallack, Mark Smith, and Mrs. Barrow. In 1859 he undertook the management of the Howard Athenæum in Boston, where his daughter Fanny made her first essay on the stage. In 1869 he became manager of the Chestnut Street theatre in Philadelphia, and there brought out his two daughters Lily and May. In 1873 he acted at Wood's museum in New York. During the season of 1875–'6 he played a long and brilliant engagement at Booth's theatre as Brutus in "Julius Cæsar." His last appearance in New York was at Booth's, in "Daniel Druce." He was one of the most finished actors on the American stage, and possessed great versatility of talent, being equally successful in tragedy and comedy. **II. Fanny Vining,** wife of the preceding, born in London in 1833. She is a daughter of Frederick Vining, stage manager of the Haymarket theatre, and was brought up on the stage, playing in baby parts when 3 years old. At 14, after a few years at boarding school, she made her début as Juliet, with G. V. Brooke as Romeo and her father as Mercutio. Until her marriage, in June, 1848, she played leading juvenile parts at the Haymarket and Drury Lane, acting with Charles Keane, Macready, and other distinguished actors. She first appeared in the United States as Margaret Elmore in "Love's Sacrifice," at the Broadway theatre, New York, in September, 1854, and has since played in the principal cities. **III. Fanny Lily Gipsy,** daughter of the preceding, born in London in 1851. She was educated in the public schools of Boston, and made her début in 1865 at the Little Tremont theatre. Shortly afterward she filled an engagement in Louisville, and played soubrette parts for one season. Mr. Augustin Daly saw her at Mrs. Drew's theatre in Philadelphia, and brought her out in New York at the Fifth Avenue theatre in 1869. There she played Lady Gay Spanker, Mabel Renfrew in "Pique" (which ran 250 nights), Lu and Fanny Ten Eyck in "Divorce," Leah, Rosalind, Nancy Sykes, and Lady Teazle. She afterward made starring tours through the country with great success, adding Imogen to the parts previously played. In 1880 she played Leah in Philadelphia, and afterward brought out in New York Miss Anna Dickinson's play of "An American Girl." In July, 1879, she married Edwin H. Price, an actor. **IV. Blanche** (BIANCA LABLANCHE), sister of the preceding, born in London in 1852. She was educated in the public schools of Boston, and at the convent of Notre Dame. In 1867 she played at the Boston museum, and attracted attention by her singing. She studied there under Adavani, and in 1869 went to Milan to cultivate her voice. She remained abroad six years, studying and afterward singing. She was a great favorite in Naples, as well as Milan. She returned to America under Strakosch in October, 1879, and made her début in opera in Philadelphia. Her personation of Marguerite in "Faust" meets with warm praise, both for her pure, clear soprano voice and her dramatic skill. She filled an engagement at Booth's in 1880. She sings in most of the Italian operas, her favorite being "La Traviata." **V. Lily,** sister of the preceding, born in Glasgow, Scotland, died in Philadelphia in January, 1878. She made her début while her father had the man-

agement of the Chestnut Street theatre, Philadelphia, and played juvenile parts there and elsewhere until 1875. She married Frost Thorn in 1874. **VI. May,** sister of the preceding, born in Boston in 1857. She made her début at the Chestnut Street theatre, Philadelphia, under her father's management, in 1872, and has since played in juvenile parts. In the winter of 1879 she filled an engagement at the Standard theatre, New York, playing in "My Uncle's Will." She acted at the Boston museum in the winter of 1880, as Lady Gwendoline Loftus in Boucicault's "Daddy O'Dowd," and May Edwards in "The Ticket-of-Leave Man." **VII. Edgar Longfellow,** brother of the preceding, born in Boston in 1861. He played with his sister Fanny in 1879 at the Grand Opera House, New York, personating Thorsby Gill in "Pique." **VIII. Henry George Bryant,** brother of the preceding, born in 1866. He has played at the Walnut Street theatre, Philadelphia, as Hendrick, with Joseph Jefferson in "Rip Van Winkle;" and in 1879 he appeared at Wallack's theatre, New York, as Sir Joseph Porter, in the juvenile "Pinafore" troupe.

DAVIS, Rebecca Harding, an American author, born in Wheeling, West Virginia, about 1840. She first came into notice as a writer by her story entitled "Life in the Iron Mills," which appeared in the "Atlantic Monthly" in 1861, and attracted wide attention. To the same periodical she contributed "A Story of To-day," which was published in book form under the title of "Margaret Howth" (1862). Since then she has published the novels "Waiting for the Verdict" (1867), "Dallas Galbraith" (1868), and "John Andross" (1874), all of which first appeared in serial form. She has also been a prolific writer of short stories and minor articles for magazines and newspapers. In 1863 she married L. Clarke Davis, editor of the Philadelphia "Inquirer."

DEATH VALLEY, an arid, depressed plain in southeastern California, near the boundary of Arizona, lying between lat. 36° and 37° N. and in about lon. 117° W. The valley derives its name from the fact that a party of emigrants, on their way to California, perished there of thirst and starvation in 1849. Dr. Owen, of the California and United States surveying expedition, followed the tracks of their wagon wheels from Furnace creek to their last encampment, 11 years afterward, and found the remains of their camp fires and the irons of their wagons in a state of perfect preservation; showing that little or no rain had fallen in the valley during the intervening years, although on the sides of the surrounding mountains there were everywhere marks of apparently recent floods. The valley is shut in on every side by very high and precipitous mountains; it has the Amargosa and Funeral ranges on the east, and the Panamint mountains on the west. Its longer axis is parallel to the mountain chains of the region, or about 20° east of north and west of south. The flanking mountains are essentially upheaval elevations; yet lava is present everywhere as a secondary feature, obsidian abounding on the western slope of the Amargosa range. The mountains on both sides bear the marks of remarkably violent disturbance, the strata being fractured and dislocated so as to divide the rock into a great number of small masses. The few fossil remains present connect the deposits with the Silurian age. The channel of the Amargosa river enters Death valley in about lat. 36°, after making a long curve northward. It is perfectly dry, and all the waters which flow into this region are absorbed by the soil. The whole valley bears the aspect of the utmost desolation. The enclosing mountains, which present forms of imposing grandeur, are black and naked, with no sign of vegetation or life upon their steep slopes. The basin itself is an alkaline desert, in the centre of which water collects and forms a kind of marsh in winter. The white efflorescence of alkali which covers the whole surface of the ground reflects the rays of the sun with such dazzling brilliancy as almost to blind the beholder. The barometric observations taken during the United States boundary survey, and computed by Major Williamson, show that the valley is depressed below the sea level, the mean of the observations giving 175 ft. as the extent of the depression. To the south of Death valley are other desert tracts, the chief of which are the Colorado and Mohave deserts, likewise depressed below the level of the sea, extending in a chain toward the head of the gulf of California. Scientists unite in supposing these larger plains on the south to have been filled at one time with the waters of the gulf. Death valley is remarkable not only as lying the furthest inland of all these depressions, but as being in close proximity to the loftiest mountain masses on the continent of North America; only 60 miles westward the culminating peaks of the Sierra Nevada rise to the height of over 14,000 ft. above the level of the sea, towering 10,000 ft. above the intervening Owen's valley.

DÉCALCOMANIE (Fr. *décalquer*, to reverse the tracing of, and *manie*, mania), the process of transferring a peculiarly prepared picture from paper to the object to be decorated, as furniture, china, silk, candles, &c. It is entirely mechanical, and requires deftness rather than skill. The pictures are readily procured at fancy stores; chance rules over the selection, however, to a great extent, as the reverse side only of the decoration is visible, and, when intended for a dark or japanned surface, even that is entirely hidden by a preparation of cement or gilding. To transfer the picture, apply a thin coating of fastening varnish to it with a brush; put it aside for a few minutes, till the varnish is partially dry, then lay it in the desired position on the article, and press gently but firmly on all parts with a cloth or a paper

cutter. When it is securely fixed, apply a wet sponge to the paper, which when thoroughly moistened will slip off, leaving the picture attached to the object. For decorating china and glass, the pictures are prepared with mineral paint. In using these, the picture is first placed between damp blotting paper, to render it flexible; then a wash of vitrifiable varnish is applied to the part of the china where the decoration is to be placed, which secures the picture in the manner described above. The object is then placed in a pail of water until the paper can be easily removed, and when thoroughly dry (having been carefully protected from dust) it is ready to be fixed in a furnace. The china will then admit of the same wear as though painted by hand. Some of the décalcomanie designs are graceful and pleasing, although most of them are too heavy and compact to admit of much freedom.

DEFREGGER, Franz, a German painter, born in Stronach, Tyrol, April 30, 1839. He early displayed his talents in carving and drawing, but first received instruction from a sculptor in Innspruck, and subsequently a training in the Munich academy and in Paris. Returning to Munich, aided by the counsels of Piloty, he began in 1867 a series of genre pieces representing peasant life in the Tyrolese Alps. His works include "The Forester's Last Return," 1867; "The Poachers," 1867; "Wrestling Match in the Tyrol," 1869; "The Prize Horse," 1873; and "The Last Call," 1874.

DE HAAS. I. William Frederick, an American painter, born in Rotterdam, Holland, in 1830, died at Fayal, Azores, July 16, 1880. He studied in his native city and at the Hague. In 1854 he emigrated to New York, and devoted himself to painting coast scenery. His works include "Old Orchard Beach," "Fishing Boats off Mount Desert," "Boon Island, Coast of Maine," "Midsummer Noon, Biddeford Beach," "Sunrise on the Susquehanna," "The Lower Harbor of Halifax," "Evening at Halifax," and "Narragansett Pier." **II. Maurice Frederick Hendrick,** brother of the preceding, born in Rotterdam in 1832. He studied at Rotterdam, London, and the Hague, painted in water-colors for a year, made many sketches on the English and Dutch coasts, and in 1857 was appointed artist to the Dutch navy. Two years later he settled in New York. Among his numerous pictures are "Farragut's Fleet Passing the Forts below New Orleans," "The Yacht Dauntless off Dover," "Deserting the Burning Ship," "Off the Coast of France," "Sunset at Sea," "The Breaking up of a Storm at Star Island," "The Beach at West Hampton," "Early Morning off the Coast," "White Island Lighthouse," "Drifted Ashore in a Fog," "Long Island Sound by Moonlight," "The Shipwreck," "Moonrise and Sunset," "Dundle Cove, Isle of Wight," "Sunset at Cape Ann," "A Marine View, Scarborough," and "The Rapids above Niagara."

DELAWARE. The population of the state as finally returned in 1880 and as compared with the returns for 1870, is as follows:

COUNTIES.	1880.	1870.
Kent	32,874	29,804
New Castle	77,716	63,515
Sussex	36,018	31,696
The state	146,608	125,015

Of the population in 1880, 74,108 were males and 72,500 females; 137,140 native and 9,468 foreign born; 120,160 white and 26,448 colored. Of the population, but 35,965 were not natives of the state. Of the foreign population, 5,791 are of Irish, 1,433 of English, 1,179 of German, 285 of Scotch, and 208 of Canadian birth. Of persons 10 years old and upward, 16,912 were unable to read, and 19,414 were unable to write, of whom 6,630 were native whites, 1,716 foreign whites, and 11,068 colored. According to the census, the state produced 3,894,264 bushels of corn, 378,508 of oats, and 1,175,272 ot wheat. There were on farms 21,933 horses, 3,931 mules and asses, 5,818 working oxen, 27,284 milch cows, 20,450 other cattle, 21,967 sheep, and 48,186 swine.—The following are statistics of Delaware's manufactures: Number of establishments, 746; capital, $15,655,822; males above 16 years of age employed, 10,250; females above 15 years of age employed, 1,426; children and youths employed, 962; yearly wages, $4,267,349; value of materials, $12,828,461; value of products, $20,514,438. Nine states are inferior to Delaware in manufacturing interests. The statistics of Delaware's cotton manufactures are: Establishments, 8; capital, $874,570; spindles, 46,188; looms, 822; officers and operators, 797; bales of cotton consumed, 7,512; pounds, 3,236,184; cost of cotton, $427,855; pounds of product, 2,867,969; yards, 8,644,028; wages of operatives, $192,727; value of products, $871,007.—According to the census of 1880, there were 519 public schools, of which 50 were for colored children; pupils enrolled, 26,412; of whom 2,234 were colored; average attendance, 17,439. The state's liabilities were as follow:

Total amount of bonded debt of the state on the 1st day of January, 1883, exclusive of the school-fund bond	$625,000 00
Bond of the state to the school fund, bearing interest at the rate of 6 per cent. per annum, payable on the 1st day of July, 1906	156,750 00
Certificate of indebtedness held by Delaware college	83,000 00
Total amount of state debt, January 1, 1883	$864,750 00

The assets were $1,264,684.98. The school fund was augmented by the conversion of the certificates of loan to the Philadelphia, Wilmington, and Baltimore Railroad Company into cash, $46,750. The legislature of 1880–'81 made an increased appropriation for colored schools, and during the year ending June 30, 1882, there was an increase of 33 per cent. in the number of schools and of 1,124 in the number of pupils. There is a school for col-

ored pupils in every hundred except one in the state. Excluding the city of Wilmington, the receipts for colored schools amounted to $5,329.02; number of schools, 65; of pupils enrolled, 3,067. These schools are under the charge of the Delaware association for the education of colored people.—Under the present constitution each county has 3 senators and 7 representatives in the legislature, while the population of New Castle co. is greater than that of Kent and Sussex together. This furnished the chief issue in 1882. Both parties have pronounced in favor of a remedy. —The population of Wilmington in 1880 was 42,478; of Dover, 2,811. See map in supplement to Volume XIII.

DE LONG, George Washington, an American explorer, born in New York in 1844, died in Siberia, Oct. 30, 1881. He was educated in the United States naval academy, and reached the rank of lieutenant in the navy in 1869. In 1871 he obtained leave of absence for two years, and went to Europe, and for a time he was in the service of the French line of transatlantic steamers. In 1874 he went to the arctic regions in the Juniata, commanded by Capt. Braine. While the vessel was lying at Upernavik, Greenland, De Long, with a small party in a steam launch, pushed northward through the ice, till he reached a point within sight of Cape York. From 1876 to 1878 he was in command of the training-ship St. Mary, in New York harbor. When the Jeannette was fitted out for an expedition to the arctic region through Bering strait, Lieut. De Long volunteered to lead the enterprise, and was given the command. He sailed from San Francisco, July 8, 1879, and the vessel was crushed in the ice, June 12, 1881. The ship's company retreated southward in three parties, intending to land at the mouth of the Lena. De Long's party landed on the delta of that river, but all perished, he and Dr. Ambler and a Chinaman being the last survivors. De Long kept a journal to the last day of his life, which was found with his body. (See Arctic Discovery.)

DE MILLE, James, a Canadian author, born in St. John, N. B., in August, 1837, died in Halifax, N. S., Jan. 28, 1880. He was educated at Brown university, Providence, R. I., graduating in the class of 1854. While in college he wrote several songs which are still sung by the students. While very young he was a contributor to the St. John papers. He was professor of classics in Acadia college from 1860 to 1865; and from the latter date until his death he was professor of history and rhetoric in Dalhousie college, Halifax. One of his earlier books, "The Dodge Club," was founded on fact, Mr. De Mille, with two of his brothers, having been members of a similar club in Paris. He published "Helena's Household" (New York, 1858); "The Martyr of the Catacombs" (1858); "Andy O'Hara" (1860); "John Wheeler's Two Uncles" (1860); "The Soldier and the Spy" (1865); "The Arkansas Ranger" (1865); "The Dodge Club" (1866); "Cord and Creese" (1867); "The American Baron" (1870); "The Lady of the Ice" (1870); "The Cryptogram" (1871); "A Comedy of Terrors" (1871); "An Open Question" (1872); and "The Living Link" (1874). He was also the author of books for boys, including "B. O. W. C.," "Fire in the Woods," "Boys of Grand Pré School," "Lost in the Fog," "Among the Brigands," "The Seven Hills," "The Winged Lion," "The Young Dodge Club," "Picked up Adrift," and "Treasures of the Sea." In 1878 he finished a treatise on rhetoric, which was published in New York.

CONTENTS OF VOLUME V.

PAGE

Code 5
Codeia 11
Codex 11
Codicil 11
Cod-Liver Oil 11
Codogno 12
Codrington, Sir Edward 12
Codrington, Sir William John 12
Codrus, King 13
Coehorn, Menno van, Baron 13
Coello, Claudio 13
Cœlus. See Uranus.
Cœur, Jacques 14
Cœurs d'Alène 14
Coffee 14
Coffee co., Ga 17
Coffee co., Ala 18
Coffee co., Tenn 18
Coffee co., Kansas 18
Coffin, Sir Isaac 18
Coffin, James Henry 18
Cogalniceano, Michael 18
Coghetti, Francesco 18
Cognac 19
Cognates 19
Cogniard, Théodore 19
Cognovit 19
Cogswell, Joseph Green, LL. D 19
Cohasset 20
Cohesion 20
Cohoes 21
Cohort 22
Cohosh 22
Coif 23
Coimbatore 23
Coimbra 23
Coin 23
Coins 23
Coire 33
Coit, Thomas Winthrop 33
Cojutepec 33
Coke 33
Coke, Natural 35
Coke, Sir Edward 35
Coke, Thomas William, Earl 40
Colapoor 40
Colberg 40
Colbert co 40
Colbert, Jean Baptiste, Marquis de Seignelay (two) 40
Colburn, Warren 41
Colburn, Zerah 41
Colby, Thomas 42
Colchester, Eng 42
Colchester co 43
Colchester, Lord. See Abbot, Charles.
Colchicum 43
Colchis 44
Cold. See Catarrh.
Colden, Cadwallader 44
Colden, Cadwallader David 44
Cold Harbor, Battles of. See Chickahominy.
Coldstream 45
Coldwater 45
Cole co 45
Cole, Thomas 45
Colebrooke, Henry Thomas 46
Coleman co 47

PAGE

Coleman, William 47
Colenso, John William, D. D 47
Coleoptera. See Beetle.
Coleraine 48
Coleridge, Hartley 48
Coleridge, Henry Nelson 48
Coleridge, Sir John Duke 49
Coleridge, Sir John Taylor 49
Coleridge, Samuel Taylor 49
Coleridge, Sara 51
Coles co 52
Coles, Cowper Phipps 52
Colet, John 52
Colet, Louise 52
Colfax co., Miss 53
Colfax co., Neb 53
Colfax co., N. M 53
Colfax, Schuyler 53
Colic 54
Coligni, Gaspard de 54
Colima 55
Collamer, Jacob 56
Collé, Charles 56
Colle, Raffaellino dal 56
College 56
College Hill 63
Colles, Christopher 63
Colleton co 63
Colleton, James 63
Colletta, Pietro 63
Collier, Arthur 63
Collier, Jeremy 64
Collier, John Payne 64
Colliery 64
Collin co 75
Collin. See Kolin.
Collingwood, Canada 75
Collingwood, Australia 75
Collingwood, Cuthbert, Lord 75
Collins, Anthony 76
Collins, Charles Allston 76
Collins, Isaac 76
Collins, William 76
Collins, William 77
Collins, William Wilkie 77
Collinson, Peter 77
Cölln, Georg Friedrich Wilibald Ferdinand von 77
Collodion 77
Collombet, François Zénon 78
Colloredo, family of 78
Colloredo, Rudolph von 78
Colloredo, Hieronymus 78
Colloredo, Ludwig 78
Colloredo-Wallsee, Johann Baptist von 78
Colloredo, Franz de Paula, Count of 78
Colloredo, Fabrizio 78
Colloredo, Hieronymus, Count of 79
Colloredo, Rudolph Joseph, Count of 79
Colloredo-Mels and Waldsee, Joseph Maria, Count of 79
Colloredo, Wenzel Joseph von, Count of 79
Colloredo-Mansfeld, Franz de Paula Gundaccar, Prince of (two) 79
Colloredo-Mansfeld, Ferdinand, Count of 79

PAGE

Colloredo - Mansfeld, Hieronymus, Count of (two) 79
Colloredo-Mansfeld, Joseph Franz Hieronymus, Prince of 79
Collot d'Herbois, Jean Marie 79
Colman, Benjamin 79
Colman, George (two) 80
Colman, Henry 80
Colmar 80
Colne 80
Colocolo 80
Colocotronis, Theodoros 81
Colocynth 81
Cologne 81
Cologne Water. See Eau de Cologne.
Colombia, United States of 83
Colombo 90
Colon. See Aspinwall.
Colon 90
Colonization Society 91
Colonna, family of 92
Colonna, Fabrizio 92
Colonna, Prospero 92
Colonna, Vittoria 92
Colonna, Marc Antonio, Duke 93
Colonna, Fabio 93
Colonsay 93
Colony 93
Colophon 95
Color 95
Colors, Complementary 97
Colors, Subjective or Accidental 97
Colorado 99
Colorado co 106
Colorado, a river, Texas 106
Colorado River of the West 106
Colorado, a river of the Argentine Republic 108
Color-Blindness 108
Colorimeter 109
Colossæ 110
Colosseum 110
Colossians, Epistle to the 111
Colossus 111
Colot, Laurent 112
Colquhoun, Patrick 112
Colquitt co 112
Colt, Samuel 112
Colton, Calvin 113
Colton, Caleb Charles 113
Colton, Walter 113
Coltsfoot 114
Coluber 114
Colugo. See Flying Lemur.
Columba, Saint 114
Columbanus, Saint 115
Columbia co., N. Y 116
Columbia co., Pa 116
Columbia co., Ga 116
Columbia co., Fla 116
Columbia co., Ark 116
Columbia co., Wis 117
Columbia co., Oregon 117
Columbia, Pa 117
Columbia, S. C 117
Columbia, Tenn 118
Columbia, Mo 118
Columbia, British. See British Columbia.

PAGE
Columbia, District of. See District of Columbia.
Columbia College ... 118
Columbia (or Oregon) River ... 121
Columbiana co ... 122
Columbium ... 122
Columbo ... 122
Columbretes ... 122
Columbus co ... 123
Columbus, Ga ... 123
Columbus, Miss ... 123
Columbus, Ky ... 123
Columbus, Ohio ... 123
Columbus, Christopher ... 125
Columbus, Bartolommeo ... 130
Columella, L. Junius Moderatus ... 130
Colusa co ... 130
Colwell, Stephen ... 130
Colza Oil. See Rape.
Coma ... 131
Comacchio ... 131
Comal co ... 131
Comana (two) ... 131
Comanche co., Texas ... 131
Comanche co., Kansas ... 132
Comanches ... 132
Comayagua ... 132
Comb ... 133
Combaconum ... 133
Combalot, Théodore, Abbé ... 134
Combe, George ... 134
Combe, Abraham ... 134
Combe, Andrew ... 135
Combermere, Stapleton Cotton, Viscount ... 135
Combes, Edmond ... 135
Combinations, Theory of ... 135
Combustion ... 135
Combustion, Spontaneous ... 137
Combustion, Human, Spontaneous ... 138
Comedy. See Drama.
Comenius, John Amos ... 139
Comet ... 140
Comfrey ... 141
Comines, Philippe de ... 141
Comitan ... 142
Comitia ... 142
Commandery ... 143
Commodore ... 143
Commodus, Antoninus Lucius Aurelius, Emperor ... 143
Common, Rights of ... 143
Common Carrier ... 144
Common Law ... 146
Common Prayer, Book of ... 152
Common Schools ... 156
Commons, House of. See Parliament.
Commune de Paris ... 160
Communism. See Socialism.
Comnenus, family of ... 170
Como ... 170
Como, Lake of ... 171
Comonfort, Ygnacio ... 171
Comorin, Cape. See Cape Comorin.
Comorn co ... 172
Comorn ... 172
Comoro Isles ... 172
Comparative Anatomy ... 172
Compass ... 186
Compass, Solar ... 188
Compiègne ... 189
Compitalia ... 189
Complexion ... 189
Compline ... 194
Complutensian Polyglot. See Bible.
Composite Order ... 194
Compound Blowpipe. See Blowpipe.
Compressibility ... 194
Compton co ... 195
Compton, Henry ... 195
Compurgators ... 195
Comstock, John Lee, M. D ... 195
Comtat-Venaissin ... 195
Comte, Auguste ... 195
Comus ... 197
Conant, Thomas Jefferson ... 197
Conant, Hannah Chaplin ... 197
Concan, North and South ... 197
Concentaina ... 197
Concepcion ... 198
PAGE
Conch ... 198
Concha, José de la ... 198
Concha, Manuel de la ... 198
Conchas. See Conchos.
Conchifera ... 198
Concho co ... 199
Conchology ... 199
Conchos ... 203
Concini, Concino. See Ancre, Marshal d'.
Conclave ... 203
Concord, N. H ... 205
Concord, Mass ... 206
Concordance ... 207
Concordat ... 207
Concordia parish ... 208
Concordia ... 208
Concordiæ Formula ... 208
Concrete ... 208
Concubinage ... 211
Condamine, Charles Marie de la ... 212
Condé-sur-l'Escaut ... 213
Condé-sur-Noireau ... 213
Condé, family of ... 213
Condé, Louis I. de Bourbon, Prince de ... 213
Condé, Henri I. de Bourbon, Prince de ... 213
Condé, Henri II. de Bourbon, Prince de ... 213
Condé, Louis II. de Bourbon, the Great ... 214
Condé, Henri Jules de Bourbon, Prince de ... 215
Condé, Louis III. de Bourbon ... 215
Condé, Louis Henri de Bourbon ... 215
Condé, Louis Joseph de Bourbon, Prince de ... 215
Condé, Louis Henri Joseph de Bourbon ... 215
Condé, Louise Adélaïde de Bourbon ... 215
Condé, José Antonio ... 215
Conder, Josiah ... 215
Condillac, Étienne Bonnot de ... 216
Condom ... 216
Condor ... 217
Condorcet, Marie Jean Antoine Nicolas Caritat, Marquis de ... 218
Condottieri ... 219
Cone ... 219
Cone, Spencer Houghton, D. D ... 220
Conecuh co ... 220
Conejos co ... 220
Cone Shells ... 221
Conestogas ... 221
Conewango Creek ... 221
Coney Island ... 221
Confarreation ... 221
Confederate States of America ... 221
Confession, Auricular ... 233
Confirmation ... 233
Conflagration ... 234
Confucius ... 238
Congaree ... 239
Congestion ... 239
Congleton ... 240
Congleton, Henry Brooke Parnell, Lord ... 240
Conglomerate ... 240
Congo ... 240
Congo, a river ... 241
Congo Snake ... 242
Congregationalism ... 242
Congress ... 247
Congreve, William ... 247
Congreve, Sir William ... 247
Coni ... 247
Conic Sections ... 248
Conington, John ... 248
Conium ... 249
Connaught ... 249
Connéaut ... 249
Connecticut ... 249
Connecticut River ... 261
Connemara ... 262
Conner. See Perch.
Conner, David ... 262
Conolly, John ... 262
Conon ... 262
Conrad, Duke ... 263
Conrad, Kings of Germany (three) ... 263
Conrad, Karl Immanuel ... 263
PAGE
Conrad, Robert T ... 264
Conradin, Duke ... 264
Conring, Hermann ... 264
Consalvi, Ercole ... 265
Conscience, Hendrik ... 265
Considérant, Victor ... 266
Consideration, in law. See Contract.
Consistory ... 266
Consols ... 266
Conspiracy ... 266
Constable ... 266
Constable, Archibald ... 267
Constable, John ... 267
Constance ... 267
Constance, Lake of ... 267
Constance, Council of ... 268
Constans, Flavius Julius, Emperor ... 268
Constant de Rebecque, Henri Benjamin ... 269
Constantin, Abraham ... 269
Constantin Faulcon ... 269
Constantine ... 270
Constantine, Emperors ... 270
Constantine I., the Great ... 270
Constantine II ... 271
Constantine IV ... 272
Constantine V ... 272
Constantine VI ... 272
Constantine VII ... 272
Constantine XIII ... 273
Constantine Nikolayevitch, Grand Duke ... 273
Constantine Pavlovitch, Grand Duke ... 273
Constantinople ... 274
Constantinople, Councils of ... 277
Constantius I. and II., Emperors ... 278
Constantius, a general ... 279
Constellations ... 279
Constituent Assembly. See Constitutional Convention.
Constitutional Convention ... 279
Consul ... 281
Consumption ... 282
Contagion ... 286
Contarini, family of ... 286
Contarini, Andrea, Doge ... 286
Contarini, Ambrogio ... 286
Contarini, Giovanni ... 286
Contempt ... 286
Conti, Princes de ... 287
Conti, François de Bourbon ... 287
Conti, Louise Marguerite de Lorraine ... 287
Conti, Armand de Bourbon ... 287
Conti, Louis Armand de Bourbon ... 287
Conti, François Louis de Bourbon ... 287
Conti, Louis François de Bourbon ... 288
Conti, Louis François Joseph de Bourbon ... 288
Continental System ... 288
Contraband ... 288
Contra Costa co ... 289
Contract ... 289
Contrayerva ... 291
Contreras ... 291
Conus. See Cone Shells.
Convent. See Monastery.
Conventicle ... 291
Convention ... 291
Conversano ... 292
Conveyance ... 292
Convocations ... 292
Convolvulus ... 293
Conway co ... 293
Conway, N. H ... 293
Conway, Wales ... 293
Conway, Moncure Daniel ... 294
Conway, Thomas ... 294
Cony. See Rabbit.
Conybeare, John ... 294
Conybeare, John Josias ... 294
Conybeare, William Daniel ... 294
Conybeare, William John ... 295
Conybeare, Henry ... 295
Cook co., Texas ... 295
Cook co., Ill ... 295
Cook, Charles, D. D ... 295
Cook, Eliza ... 295
Cook, James ... 296
Cooke, George Frederick ... 297
Cooke, George Wingrove ... 297

PAGE
Cooke, John Rodgers.. 297
Cooke, Philip Pendleton..... 297
Cooke, John Esten..... 297
Cookery 298
Cookman, George G..... 301
Cook's Islands..... 301
Cook's Strait..... 301
Cookstown..... 301
Cooley, Thomas McIntyre..... 301
Cooly 301
Coomassie. See Koomassie.
Cooper co..... 306
Cooper, Anthony Ashley. See Shaftesbury.
Cooper, Sir Astley..... 306
Cooper, James Fenimore..... 307
Cooper, Susan Fenimore..... 309
Cooper, Peter..... 309
Cooper, Samuel, D. D..... 310
Cooper, Thomas (two)..... 310
Cooper, Thomas Sidney..... 310
Coöperative Associations. See Socialism.
Cooper River..... 311
Cooperstown 311
Coorg..... 311
Coös co., N. H..... 311
Coös co., Oregon..... 311
Coosa co..... 311
Coosa, a river..... 312
Coot..... 312
Copaiba. See Balsam.
Copais..... 312
Copal 312
Copan..... 313
Copartnership. See Partnership.
Cope, Charles West..... 313
Cope, Edward Drinker..... 314
Copenhagen 314
Copernicus Nikolaus..... 316
Coprah co..... 316
Copiapó..... 316
Copland, James 317
Copleston, Edward, D. D..... 317
Copley, John Singleton..... 317
Copper..... 317
Copperas..... 320
Copperhead..... 320
Coppermine River..... 321
Copper Mines..... 321
Copperplate. See Engraving.
Copper Smelting..... 325
Coppet..... 327
Coprolites..... 327
Coptic Language..... 327
Coptis..... 330
Copts..... 330
Copyright..... 335
Coquerel, Athanase Laurent Charles 335
Coquerel, Charles Augustin..... 338
Coquerel, Athanase Josué..... 338
Coquilla Nuts..... 338
Coquimbo 338
Coral 339
Coram, Thomas 342
Corato..... 342
Coray, Adamantios..... 342
Corban..... 342
Corbaux, Fanny..... 343
Corbeil..... 343
Corbet, Richard..... 343
Corbould, Henry..... 343
Corbould, Edward Henry 343
Corcyra. See Corfu.
Cordara, Giulio Cesare 343
Corday d'Armands, Marianne Charlotte de..... 343
Cordeliers..... 344
Cordillera..... 344
Cordova, Spain..... 347
Cordova, Argentine Republic..... 348
Cordova, Mexico..... 348
Cordova, Fernando Fernandez de.. 349
Cordova, Francisco Fernandez de.. 349
Cordova, Gonsalvo de. See Gonsalvo de Cordova.
Corea 349
Corentyn..... 351
Corfu..... 351
Coriander..... 352
Corigliano..... 352
Corinth, Greece..... 352
Corinth, Miss..... 354
Corinth, Gulf of. See Lepanto.
Corinthians, Epistles to the..... 354
Coriolanus..... 355
Cork..... 356
Cork, Ireland..... 356
Corleone..... 357
Cormenin, Louis Marie de la Haie, Viscount de..... 358
Cormontaigne, Louis de..... 358
Cormorant..... 358
Corn..... 359
Corn, Indian. See Maize.
Cornaro, family of..... 359
Cornaro, Caterina..... 359
Cornaro, Luigi 360
Cornbury, Edward Hyde, Lord..... 360
Cornea..... 360
Corneille, Pierre..... 360
Corneille, Thomas..... 361
Cornelia (two)..... 361
Cornelis, Cornelius..... 362
Cornelius, Elias, D. D..... 362
Cornelius, Peter von 362
Cornelius Nepos. See Nepos.
Cornell University..... 363
Cornet-à-Pistons..... 367
Cornhert, Diederik..... 367
Corniani, Giovanni Battista, Count. 367
Corning..... 367
Corn Laws 367
Corn Snake..... 368
Cornu, Sébastien Melchior..... 368
Cornucopia..... 369
Cornwall, Eng..... 369
Cornwall, Conn..... 369
Cornwall, N. Y..... 369
Cornwall, Barry. See Procter, Bryan Waller.
Cornwallis, Charles, Marquis..... 370
Coro..... 370
Coro, Santa Aña de..... 370
Corolla..... 370
Coromandel, Coast of..... 370
Coronach..... 371
Coronado, Francisco Vasquez de... 371
Coronado de Perry, Carolina..... 371
Coroner 371
Coronet 371
Corporal 372
Corporale 372
Corporation..... 372
Corpulence..... 373
Corpus Christi, a festival..... 374
Corpus Christi, Texas..... 374
Corpus Juris. See Civil Law.
Correa de Serra, José Francisco.... 374
Correction of the Press 375
Correggio, Antonio Allegri da..... 376
Correlation of Forces, and Conservation of Force..... 377
Corrèze..... 381
Corrie, Daniel 382
Corrientes..... 382
Corrosive Sublimate 382
Corry 383
Corset 383
Corsica..... 383
Cort, Cornelis..... 384
Cort, Henry..... 384
Corte..... 384
Cortereal, Gaspar..... 385
Cortes..... 385
Cortes, Hernan 385
Cortetz, an island of Russia. See Kortetz.
Cortland co..... 386
Cortona..... 387
Cortona, Pietro Berretini da..... 387
Corundum..... 387
Corunna 387
Corvinus, Matthias. See Matthias Corvinus.
Corvin - Wiersbitzki, Otto Julius Bernhard 388
Corvisart-Desmarets, Jean Nicolas, Baron..... 388
Corwin, Thomas..... 389
Coryat, Thomas..... 389
Corybantes..... 389
Coryell co..... 389
Coryphæus..... 389
PAGE
Cos..... 390
Cosel, a town of Prussia. See Kosel.
Cosel, Countess of..... 390
Cosenza..... 390
Coshocton co..... 390
Cosin, John, D. D..... 391
Cosmas of Prague..... 391
Cosmo. See Medici.
Cossacks 391
Cossé, Charles de, Count..... 392
Cossipore 392
Costa, Sir Michael..... 392
Costa-Cabral, Antonio Bernando da, Duke of Thomar..... 392
Costa Rica 393
Coste, Jean Jacques Marie Cyprien Victor 397
Costello, Dudley..... 397
Costello, Louisa Stuart..... 397
Coster, Laurens Janszoon..... 397
Costilla co..... 397
Cosway, Richard..... 398
Cota, Rodrigo de..... 398
Côte-d'Or..... 398
Côtes-du-Nord..... 398
Cotes, Roger..... 398
Cothurnus..... 398
Cotin, Charles..... 398
Cotopaxi 399
Cotrone..... 400
Cotta, family of..... 400
Cotta, Johann Georg..... 400
Cotta, Johann Friedrich..... 400
Cotta, Johann Friedrich, Baron.... 400
Cotta, Georg 400
Cotta, Bernhard..... 400
Cottabus 400
Cottenham, Charles Christopher Pepys, Earl of..... 401
Cottereau, Jean. See Chouans.
Cottin, Marie Sophie Ristaud..... 401
Cottle, Joseph..... 401
Cotton..... 401
Cotton, Sir Robert Bruce..... 411
Cotton Manufacture..... 411
Cottonwood co..... 419
Cotton Worm..... 419
Cotys 420
Couch, Richard Quillar..... 420
Couch Grass..... 420
Couching. See Cataract.
Coucy, De, family of..... 421
Coucy, Thomas de, Count..... 421
Coucy, Renaud de..... 421
Coucy, Enguerrand III..... 421
Coucy, Enguerrand VII..... 421
Cough..... 421
Couguar..... 422
Coulmiers, Battle of. See Orleans.
Coulomb, Charles Augustin de..... 422
Council 422
Council of Ten..... 424
Council of the Ancients..... 424
Council of Five Hundred..... 424
Council of State..... 424
Council of Castile..... 424
Council of the Indies..... 424
Council, Privy..... 424
Council Bluffs..... 425
Counsellor. See Lawyer.
Count..... 425
Counterpoint. See Harmony.
County 426
Courayer, Pierre François le..... 426
Courbet, Gustave..... 426
Courbevoie..... 427
Courcelles..... 427
Courcelles, Daniel de Remi, Seigneur de 427
Courcelles, Thomas de..... 427
Courier de Méré, Paul Louis 427
Courlan..... 427
Courland..... 428
Court 428
Court de Gébelin, Antoine..... 433
Courten, William (two)..... 433
Court Martial..... 434
Court of Love..... 434
Courtois, Jacques. See Borgognone.
Courtrai..... 434
Cousin, Jean..... 434
Cousin, Victor..... 434

PAGE
Cousin-Montauban. See Palikao, Count de.
Coussemaker, Charles Edward Henri de 436
Coustou, Nicolas 437
Coustou, Guillaume (two) 437
Coutances 437
Couthon, Georges 437
Coutts. See Burdett-Coutts.
Couture, Thomas 437
Covenanters. See Cameronians.
Coventry, Eng 437
Coventry, R. I. 438
Coverdale, Miles 438
Covilham, João Peres da 439
Covilhão 439
Covington co., Ala 439
Covington co., Miss 439
Covington 439
Cow. See Cattle.
Cow Bird 440
Cowell, John 440
Cowes 441
Coweta co 441
Cowetas. See Creeks.
Cowhage 441
Cowl 442
Cowley co 442
Cowley, Abraham 442
Cowlitz co 442
Cowpens 442
Cowper, William, Earl 443
Cowper, William (two) 443
Cowry 444
Cow Tree 445
Cox, David 445
Cox, Francis Augustus, D. D 445
Cox, Jacob Dolson 445
Cox, Richard 446
Cox, Samuel Hanson 446
Cox, Samuel Sullivan 446
Coxcie, Michael 446
Coxe, Arthur Cleveland, D. D 446
Coxe, Tench 447
Coxe, William 447
Coyne, Joseph Stirling 447
Coyote. See Wolf.
Coypel, Noël 447
Coypel, Antoine 447
Coypel, Noël Nicolas 447
Coypel, Charles Antoine 447
Coypu 447
Coysevox, Antoine 448
Cozzens, Frederick Swartwout 448
Crab 448
Crab Apple. See Apple.
Crabb, George 451
Crabbe, George 451
Crabeth, Dirk and Wouter 452
Crab Stones 452
Cracow 452
Crafts, Samuel Chandler 454
Crafts, William 454
Craig co 454
Craighead co 454
Craik, Dinah Maria Mulock 454
Craik, George Lillie 455
Craik, James, M. D 455
Crake 455
Cramer, Johann Andreas 455
Cramer, Karl Friedrich 455
Cramer, John Baptist 456
Cramoisy, Sébastien 456
Cranach, Lucas 456
Cranberry 456
Cranch, William 457
Cranch, Christopher Pearse 457
Crane, a bird 457
Crane, a machine 458
Crane, Anne Moncure (Seemüller) 459
Cranmer, Thomas 459
Crantor of Soli 460
Cranworth, Robert Monsey Rolfe, Baron 461
Cranz, David 461
Crape 461
Crashaw, Richard 461
Crassus, Lucius Licinius 461
Crassus, Marcus Licinius 462
Craterus 462
Crates (four) 462
Cratinus (two) 463
PAGE
Cratippus (two) 463
Craufurd, Quintin 463
Craven co 463
Craven, Elizabeth. See Anspach.
Crawfish 463
Crawford co., Pa 465
Crawford co., Ga 465
Crawford co., Ark 465
Crawford co., Ohio 465
Crawford co., Ind 465
Crawford co., Ill 465
Crawford co., Mich 465
Crawford co., Wis 465
Crawford co., Iowa 466
Crawford co., Mo 466
Crawford co., Kansas 466
Crawford, Nathaniel Macon, D. D 466
Crawford, Quintin. See Craufurd.
Crawford, Thomas 466
Crawford, William Harris 467
Crawfordsville 468
Crayer, Gaspard de 468
Cream of Tartar 468
Creatine 469
Crébillon, Prosper Jolyot de 469
Crébillon, Claude Prosper Jolyot de 469
Crécy 470
Credi, Lorenzo di 470
Crédit Mobilier 470
Crediton 471
Creeks 471
Creeper 472
Crefeld 473
Creichton, John 473
Crelle, August Leopold 473
Crema 473
Crémieux, Isaac Adolphe 473
Cremnitz. See Kremnitz.
Cremona 474
Crenic Acid 474
Crenshaw co 475
Creole 475
Creon, King (two) 475
Creosote 475
Crescent 476
Crescentini, Girolamo 476
Crescenzi, Pietro de' 476
Cress 476
Cresson, Elliott 477
Cressy. See Crécy.
Creswick, Thomas 477
Cretaceous Group 477
Crete. See Candia.
Cretins 477
Creuse 478
Creutz, Gustaf Filip, Count 478
Creuzer, Georg Friedrich 478
Creuznach 479
Crévecœur, Hector Saint-John de 479
Crévecœur, Philippe de, Baron 479
Crewe 479
Cribbage 479
Crichton, James 480
Cricket, an insect 480
Cricket, a game 482
Crillon, family of 482
Crillon, Louis des Balbes de Breton de 483
Crillon, Louis, Duke de 483
Crimea 483
Criminal Law 485
Crimmitschau 491
Crinoïdea 491
Crispin and Crispinian, Saints 491
Crissa 491
Critias 491
Crito 491
Critolaus 491
Crittenden co., Ark 492
Crittenden co., Ky 492
Crittenden, John Jordon 492
Crivelli, Carlo 492
Croatia 493
Crocker co 494
Crockett, David 494
Crocodile 494
Crocus 498
Crœsus, King 498
Croft, William 498
Croghan, George 498
Croker, John Wilson 499
Crocker, Thomas Crofton 499
PAGE
Croly, George 499
Cromlech 500
Cromwell, Oliver 500
Cromwell, Richard 507
Cromwell, Henry 508
Cromwell, Thomas, Earl 509
Cronstadt 510
Cronstadt, Transylvania. See Kronstadt.
Crooks, George Richard, D. D 511
Cropsey, Jasper Frank 511
Crosby, Howard, D. D 511
Crosland, Mrs. Newton (Camilla Toulmin) 511
Cross 511
Cross co 514
Crossbill 514
Crossbow. See Archery.
Crosse, Andrew 515
Cross Keys 515
Crosswell, Edwin 516
Croswell, Harry, D. D 516
Crotch, William 516
Croton 516
Crotona 516
Croton Oil 516
Croup 517
Crousaz, Jean Pierre de 519
Crow 519
Crow Blackbird. See Grackle.
Crowe, Catharine (Stevens) 522
Crowe, Eyre Evans 522
Crown 522
Crown Point 523
Crows 523
Crow Wing co 524
Croydon 524
Croyland 524
Crucible 525
Crucifix 525
Crucifixion 525
Cruciger, Kaspar 526
Cruden, Alexander 526
Cruger, John 526
Cruger, John Harris 526
Cruger, Henry 527
Cruikshank, George 527
Cruikshank, William 527
Crusade 527
Crusades 527
Crusenstolpe, Magnus Jacob 532
Crusius, Christian August 532
Crustacea 532
Cruveilhier, Jean 533
Cruvelli, Sophie, Baroness 534
Cruz, Juana Inez de la 534
Cryolite 534
Crypto-Calvinists 534
Crystalline Lens 535
Crystallography 535
Csaba 541
Csanad 542
Csokonai, Vitéz Mihály 542
Csoma de Körös, Sándor (Körösi Csoma) 542
Csongrád 542
Ctenoids. See Comparative Anatomy, vol. v., p. 183.
Ctenophoræ 543
Ctesias 543
Ctesibius 543
Ctesiphon, an orator 543
Ctesiphon, a city 543
Cuba 543
Cube 555
Cubebs 555
Cubit 556
Cucking Stool 556
Cuckoo 556
Cucumber 558
Cudbear 559
Cuddalore 559
Cuddapah 559
Cudworth, Ralph 559
Cuenca, Spain 560
Cuenca, Ecuador 560
Cueva, Juan de la 561
Cufah. See Cufic Inscriptions.
Cuffee, Paul (two) 561
Cufic Inscriptions and Coins 561
Cujas, Jacques 562
Culdees 562

PAGE
Culiacan ... 563
Cullen, Paul ... 563
Cullen, William ... 563
Cullera ... 564
Culloden House ... 564
Culm, Prussia ... 564
Culm, in Bohemia. See Kulm.
Culna ... 564
Culpeper co ... 564
Culpeper, John ... 564
Culpeper, Thomas, Lord ... 564
Cumæ ... 564
Cumaná ... 565
Cumania, Great ... 565
Cumania, Little ... 566
Cumberland co, Me ... 566
Cumberland co., N. J ... 566
Cumberland co., Pa ... 566
Cumberland co., Va ... 566
Cumberland co., N. C ... 566
Cumberland co., Tenn ... 566
Cumberland co., Ky ... 567
Cumberland co., Ill ... 567
Cumberland co., Canada ... 567
Cumberland co., Eng ... 567
Cumberland, Md ... 567
Cumberland, Richard ... 567
Cumberland, Richard ... 568
Cumberland, William Augustus, Duke of ... 568
Cumberland Mountains ... 568
Cumberland Presbyterians ... 568
Cumberland River ... 569
Cuming co ... 569
Cuming, Hugh ... 569
Cumin Seed ... 569
Cumming, John, D. D ... 569
Cumming, Ronaleyn George Gordon ... 570
Cummings, Joseph, D. D., LL.D ... 570
Cummins, Maria S ... 570
Cundinamarca ... 570
Cundurango ... 570
Cunego, Domenico ... 570
Cuneiform Inscriptions ... 570
Cunningham, Allan ... 578
Cunningham, Alexander ... 578
Cunningham, Peter ... 578
Cunningham, John ... 578
Cupar ... 578
Cupel, and Cupellation. See Assaying.
Cupid. See Eros.
Cupping ... 579
Curaçoa ... 579
Curassow ... 579
Curate ... 581
Curculio ... 581
Cures ... 582
Curetes ... 582
Curfew ... 582
Curiæ ... 582
Curiatii. See Horatii.
Curio, C. Scribonius (two) ... 582
Curius Dentatus. See Dentatus.
Curlew ... 583
Curling ... 584
Curran, John Philpot ... 584
Currant ... 585
Currency. See Money.
Current River ... 586
Currents. See Atlantic Ocean.
Currie, James ... 586
Currituck co ... 586
Curry ... 586
Curry co ... 586
Curry, Daniel, D. D ... 587
Currying. See Tanning.
Cursor, Papirius. See Papirius.
Curtesy ... 587
Curtis, Benjamin Robbins ... 587
Curtis, George Ticknor ... 587
Curtis, George William ... 587
Curtius, Ernst ... 588
Curtius, Georg ... 588
Curtius, Marcus ... 588
Curtius Rufus, Quintus ... 589
Curve ... 589
Curzola ... 589
Curzon, Paul Alfred de ... 589
Cush ... 589
Cushing, Caleb ... 589
PAGE
Cushing, Luther Stearns ... 590
Cushing, Thomas ... 590
Cushing, William ... 590
Cushman, Charlotte Saunders ... 591
Cushman, Susan ... 591
Cushman, Robert ... 591
Cushman, Thomas ... 592
Cusk ... 592
Custard Apple ... 592
Custine, Adam Philippe, Count de ... 593
Custine, Astolphe, Marquis de ... 593
Custis, George Washington Parke ... 593
Customs and Usages ... 593
Custozza ... 594
Cüstrin. See Küstrin.
Cutch ... 594
Cutch, Gulf of ... 594
Cutch Gundava ... 594
Cuthbert, Saint ... 594
Cutler, Manasseh ... 595
Cutler, Jervis ... 596
Cutler, Timothy, D. D ... 596
Cuttack ... 596
Cuttle Fish ... 596
Cutty Stool ... 597
Cut-Worm ... 597
Cuvier, Georges Chrétien Léopold Frédéric Dagobert ... 597
Cuvier, Frédéric ... 601
Cuxhaven ... 601
Cuyaba, a town ... 601
Cuyaba, a river ... 601
Cuyahoga co ... 601
Cuyahoga, a river ... 602
Cuyp, Albert ... 602
Cuza. See Alexander I., John.
Cuzco ... 602
Cyanogen ... 603
Cyaxares I. and II. See Media.
Cybele ... 603
Cycads ... 604
Cyclades ... 604
Cyclamen ... 605
Cycloid ... 605
Cycloids ... 605
Cyclone ... 605
Cyclopædia ... 605
Cyclops ... 611
Cyclostomes. See Lamprey.
Cydnus ... 612
Cydonia ... 612
Cygnus ... 612
Cymbals ... 612
Cynægirus ... 612
Cynics ... 612
Cynocephali ... 612
Cynoscephalæ ... 613
Cynuria ... 613
Cypræa. See Cowry.
Cypress ... 613
Cyprian, Thascius Cæcilius, Saint ... 614
Cyprus ... 616
Cypselus ... 617
Cyrenaica ... 617
Cyrenaics ... 617
Cyrene ... 617
Cyril of Alexandria, Saint ... 618
Cyril of Jerusalem, Saint ... 619
Cyril and Methodius ... 619
Cyrus, a river of Asia. See Kur.
Cyrus the Elder ... 620
Cyrus the Younger ... 621
Cythera. See Cerigo.
Cyzicus ... 622
Czajkowski, Michal ... 622
Czar ... 622
Czarniecki, Stefan ... 622
Czartoryski, family of ... 623
Czartoryski, Michal Fryderyk ... 623
Czartoryski, August Alexander ... 623
Czartoryski, Adam Kazimierz ... 623
Czartoryski, Elzbieta ... 624
Czartoryski, Marya Anna ... 624
Czartoryski, Adam Jerzy ... 624
Czaslau ... 625
Czegléd ... 625
Czelakowski. See Celakovski.
Czenstochowa ... 625
Czermak, Johann Nepomuk ... 625
Czermak, Jaroslaw ... 625
Czernowitz ... 625
Czerny, Karl ... 625
PAGE
Czerny, George ... 625
Czuczor, Gergely ... 626

D

D ... 626
Dablon, Claude ... 627
Dacca ... 627
Dacca Jelalpoor. See Fureedpoor.
Dace ... 628
Dacia ... 629
Dacier, André ... 629
Dacier, Anne (Lefèvre) ... 629
Da Costa, Izaak ... 630
Dactylology. See Deaf and Dumb.
Dade co., Ga ... 630
Dade co., Fla ... 630
Dade co., Mo ... 630
Dædalus ... 630
Dael, Jan Frans van ... 630
Daendels, Herman Willem ... 630
Daffodil. See Narcissus.
Daggett, David, LL. D ... 631
Daggett, Naphtali ... 631
Daghestan ... 631
Dagobert I., King ... 631
Dagobert II., King ... 632
Dagon ... 632
Daguerre, Louis Jacques Mandé ... 632
Daguin, Pierre Adolphe ... 632
Dahl, Johann Kristen Clausen ... 632
Dahl, Mikael ... 632
Dahl, Vladimir Ivanovitch ... 632
Dahlbom, Anders Gustaf ... 633
Dahlgren, Karl Johan ... 633
Dahlgren, John Adolf ... 633
Dahlgren, Ulric ... 633
Dahlia ... 633
Dahlmann, Friedrich Christoph ... 634
Dahlonega ... 634
Dahomey ... 634
Dairy. See Butter, Cattle, Cheese.
Daisy ... 638
Dakota ... 638
Dakota co., Minn ... 641
Dakota co., Neb ... 641
Dakotas ... 641
Dalayrac, Nicolas ... 641
Dalberg, family of ... 641
Dalberg, Johann ... 641
Dalberg, Wolfgang Heribert ... 641
Dalberg, Emmerich Joseph ... 641
Dalberg, Karl Theodor Anton Maria ... 641
Dalby, Isaac ... 642
Dale co ... 642
Dale, David ... 642
Dale, Richard ... 642
Dalecarlia ... 642
Dal Elf ... 643
Dalgarno, George ... 643
Dalhousie, James Andrew Broun Ramsay, Marquis of ... 643
Dallas co., Ala ... 643
Dallas co., Tex ... 643
Dallas co., Ark ... 643
Dallas co., Iowa ... 643
Dallas co., Mo ... 643
Dallas, Alexander James ... 644
Dallas, George Mifflin ... 644
Dallas, Robert Charles ... 645
Dall' Ongaro, Francesco ... 645
Dalmatia ... 645
Dalmatica ... 646
Dalrymple, family of ... 646
Dalrymple, James, Viscount ... 646
Dalrymple, John, Earl (two) ... 647
Dalrymple, Sir David ... 647
Dalrymple, Alexander ... 647
Dalton ... 647
Dalton, Edward Barry ... 647
Dalton, John ... 648
Dalton, John Call ... 648
Daly, César ... 649
Dam ... 649
Damascene, John ... 651
Damascenus, Nicolaus ... 651
Damascius ... 651
Damascus ... 651
Damascus Blades ... 653
Damask ... 655
Damaskeening ... 656

PAGE
Damaun ... 656
Dambool ... 656
Damer, Anne Seymour ... 656
Damiani, Pietro ... 656
Damiens, Robert François ... 656
Damietta ... 656
Damiron, Jean Philibert ... 657
Damocles ... 657
Damon and Pythias ... 657
Damoreau, Laure Cinthie (Montalant) ... 657
Dampier, William ... 657
Dampierre, Auguste Henri Marie Picot, Marquis de ... 657
Dan, a name ... 658
Dan, a city ... 658
Dan, a river ... 658
Dana, Francis ... 658
Dana, James Dwight, LL. D. ... 659
Dana, Richard ... 659
Dana, Richard Henry ... 660
Dana, Richard Henry, Jr ... 660
Dana, Samuel Luther, M. D., LL. D. 661
Danaë ... 662
Danaïdes ... 662
Danaüs ... 662
Danbury ... 662
Danby, Francis ... 662
Dance, George ... 662
Dance of Death ... 663
Dancing Disease ... 663
Dancourt, Florent Carton ... 664
Dandelion ... 664
Dandolo, Enrico, Doge ... 664
Dandolo, Andrea, Doge ... 665
Dandolo, Girolamo ... 665
Dandolo, Vincenzo, Count ... 665
Dandolo, Tullio, Count ... 665
Dane co ... 665
Dane, Nathan ... 666
Danegelt ... 666
Danican, François André (Philidor) 666
Daniel ... 666
Daniel, Hermann Adalbert ... 668
Daniel, Samuel ... 668
Daniell, John Frederick ... 668
Daniell, Samuel ... 668
Daniell, Thomas ... 668
Daniell, William ... 668
Danish Language and Literature. See Denmark.
Dannecker, Johann Heinrich von ... 669
Dannemora, Sweden ... 669
Dannemora, N. Y. ... 669
Dansville ... 669
Dantan, Jean Pierre ... 669
Dante degli Alighieri ... 669
Danton, Georges Jacques ... 677
Dantzic ... 678
Danube ... 679
Danvers ... 681
Danville, Pa. ... 681
Danville, Va. ... 682
Danville, Ky. and Ill. ... 682
Daphne, a nymph ... 682
Daphne, in Syria ... 682
Daphne, a plant ... 682
Daphnephoria ... 683
Da Ponte, Lorenzo ... 683
Da Ponte, Lorenzo L. ... 683
Dappes ... 683
Darabgerd ... 683
D'Arblay, Madame. See Arblay, Madame d'.
Darboy, Georges ... 683
Darbyites. See Plymouth Brethren.
Darcet, Jean ... 684
Dardanelles ... 684
Dardania (two) ... 685
Dardanus ... 685
Darden, Miles ... 685
Dare co ... 685
Dare, Virginia ... 685
Dareste de la Chavanne, Antoine Élisabeth Cléopas ... 686
Darfoor ... 686
Dargaud, Jean Marie ... 686
Daric ... 686
Darien, Colony of ... 686
Darien, Gulf of ... 687
Darien, Isthmus of. See Panama.
Darius the Mede ... 687
PAGE
Darius Hystaspis ... 687
Darius Ochus ... 688
Darius Codomannus ... 688
Darke co ... 689
Darlaston ... 689
Darley, Felix O. C. ... 689
Darley, George ... 689
Darling, a river ... 689
Darling, Grace ... 689
Darlington co ... 690
Darlington ... 690
Darlington, William ... 690
Darmstadt ... 690
Darnel ... 691
Darnetal ... 691
Darnley, Henry Stuart, Lord ... 691
Darter ... 692
Dartford ... 693
Dartmoor ... 693
Dartmouth ... 694
Dartmouth College ... 694
Daru, Pierre Antoine Noël Bruno, Count ... 696
Daru, Napoléon, Count ... 696
Darwar ... 696
Darwen ... 697
Darwin, Charles Robert ... 697
Darwin, Erasmus ... 697
Dasent, George Webbe ... 698
Dash, Countess ... 698
Dashkoff, Yekaterina Romanovna, Princess ... 698
Dasyure ... 698
Date Palm ... 699
Date Plum ... 699
Datura ... 700
Daub, Karl ... 701
Daubenton, Louis Jean Marie ... 701
Daubeny, Charles Giles Bridle ... 702
D'Aubigné. See Merle d'Aubigné.
Daudin, François Marie ... 702
Daulis ... 702
Daumas, Melchior Joseph Eugène. 702
Daun, Leopold Joseph Maria, Count 702
Daunou, Pierre Claude François ... 702
Dauphin ... 703
Dauphin co ... 703
Dauphiny ... 703
Davenant, Sir William ... 703
Davenant, Charles ... 704
Davenport ... 704
Davenport, John ... 705
D'Avezac, A. G. Valentin ... 705
David, King ... 705
David II. See Bruce.
David, Félicien César ... 706
David, Ferdinand ... 706
David, Jacques Louis ... 706
David, Pierre Jean ... 707
Davidson co., N. C. ... 707
Davidson co., Tenn ... 707
Davidson co., Dakota ... 707
Davidson, Lucretia Maria ... 707
Davidson, Margaret Miller ... 708
Davidson College ... 708
Davie co ... 708
Davies, Charles ... 708
Davies, Sir John ... 708
Davies, Samuel, D. D. ... 708
Daviess co., Ky ... 708
Daviess co., Ind ... 709
Daviess co., Mo ... 709
Daviess, Joseph Hamilton ... 709
Davila, Enrico Caterino ... 709
Davis co., Texas ... 710
Davis co., Iowa ... 710
Davis co., Kansas ... 710
Davis co., Utah ... 710
Davis, Andrew Jackson ... 710
Davis, Charles Henry ... 710
Davis, Edwin Hamilton ... 711
Davis, Henry ... 711
Davis, Henry Winter ... 711
Davis, Jefferson ... 711
Davis, Jefferson C. ... 717
Davis, John (two) ... 717
Davis, Sir John Francis ... 717
Davis, Matthew L. ... 717
Davis, Thomas ... 717
Davis Strait ... 718
Davos ... 718
Davoust, Louis Nicolas ... 718
PAGE
Davy, Sir Humphry ... 718
Davy, John ... 720
Dawes, Rufus ... 721
Dawison, Bogumil ... 721
Dawson co., Ga. ... 721
Dawson co., Neb. ... 721
Dawson co., Montana ... 721
Dawson, John William ... 721
Dax ... 721
Day ... 721
Day, Jeremiah ... 722
Day, Stephen ... 722
Day, Thomas ... 723
Dayton ... 723
Dayton, Elias ... 724
Dayton, Jonathan ... 724
Dayton, William Lewis ... 724
Deacon ... 724
Deaconess ... 725
Dead Sea ... 725
Deaf and Dumb, The ... 727
Deák, Ferencz ... 741
Deal ... 741
Dean ... 741
Deane, James ... 742
Deane, Silas ... 742
Dean Forest ... 743
Dearborn co ... 743
Dearborn, Henry ... 743
Death Watch ... 743
De Bay. See Baius.
Debenture ... 744
Debreczin ... 744
Debtor and Creditor ... 745
Decalogue ... 747
Decamps, Alexandre Gabriel ... 747
De Candolle. See Candolle.
Decapods ... 747
Decapolis ... 747
Decatur co., Ga. ... 747
Decatur co., Tenn. ... 748
Decatur co., Ind ... 748
Decatur co., Iowa ... 748
Decatur, Ga. ... 748
Decatur, Ill. ... 748
Decatur, Stephen ... 748
Decatur, Stephen, Jr ... 748
Decazes, Élie, Duke ... 750
Decazeville ... 750
Deccan ... 750
December ... 750
Decemvirs ... 751
De Charms, Richard ... 751
Decigramme. See Gramme.
Decimal ... 751
Decius, Caius Messius Quintus Trajanus, Emperor ... 751
Decius Mus, Publius (three) ... 752
Decize ... 752
Decken, Karl Klaus von der ... 752
Decker, Jeremias de ... 752
Decker, Thomas ... 752
Decretals ... 752
Decuriones ... 753
Dedham ... 753
Dee, four rivers ... 753
Dee, John ... 753
Deed ... 754
Deems, Charles F., D. D. ... 756
Deep River ... 756
Deep-Sea Sounding. See Atlantic Ocean.
Deer ... 756
Deerfield ... 761
Deer Grass ... 761
Deer Lodge co ... 762
Defeasance, Deed of ... 762
Deffand, Marie, Marquise du ... 762
Defiance co ... 762
Defoe, Daniel ... 762
De Forest, John William ... 764
Deger, Ernst ... 764
De Gerando. See Gerando.
Degree, in algebra ... 764
Degree, in trigonometry ... 764
Degree of latitude ... 764
Degree of longitude ... 765
Dehn, Siegfried Wilhelm ... 765
Deioces. See Media.
Déjazet, Pauline Virginie ... 765
Dejean, Pierre François Marie Auguste, Count ... 765

PAGE

De Kalb co., Ga. 765
De Kalb co., Ala. 765
De Kalb co., Tenn. 765
De Kalb co., Ind. 765
De Kalb co., Ill. 766
De Kalb co., Mo. 766
De Kalb, John, Baron. 766
Dekker. See Decker.
De la Beche, Sir Henry Thomas. 766
Delacroix, Ferdinand Victor Eugène 766
Delagoa Bay 767
Delambre, Jean Baptiste Joseph. 767
De Lancey, William Heathcote. 767
Delane, William Augustus Frederick. 767
Delane, John Thaddeus. 767
De la Ramé, Louisa (Ouida). 767
Delaroche, Paul. 768
Delaunay, Charles Eugène 768
Delavigne, Jean François Casimir. 768
Delaware. 769
Delaware co., N. Y. 774
Delaware co., Pa. 775
Delaware co., Ohio. 775
Delaware co., Ind. 775
Delaware co., Iowa 775
Delaware Court House. 775
Delaware, Lord. See Delawarr.
Delaware Bay. 775
Delaware River 776
Delawares. 776

PAGE

Delawarr, Thomas West, Lord. 778
Delbrück, Martin Friedrich Rudolph 778
Delescluze, Louis Charles 778
Delessert, Benjamin 778
Delft. 778
Delft Ware. 779
Delhi 779
Delille, Jacques. 781
Deliniers, Jacques Antoine Marie. 781
Delirium Tremens. 781
Delisle. See Lisle.
Delitzsch. 782
Delitzsch, Franz. 782
Delius. Nikolaus. 782
Del Norte co. 782
Delolme, Jean Louis. 783
Delorme, Marion 783
Delos 783
Delpech, Jacques Mathieu 784
Delphi 784
Delphin Classics. 785
Delphinium 785
Delta co., Texas 786
Delta co., Mich. 786
Deluc, Jean André 787
Deluc, Guillaume Antoine. 787
Deluge. 787
Demades. 788
Demavend, Mount. 788
Dembea, Lake. See Tzana.
Dembinski, Henryk. 788

PAGE

Demerara, a river. 789
Demerara, a division of British Guiana. See Guiana.
Demeter. See Ceres.
Demetrius, Russian Princes. 789
Demetrius Phalereus. 790
Demetrius Poliorcetes. 790
Demetrius (I.) Soter. 791
Demidoff, family of. 791
Demidoff, Nikita. 791
Demidoff, Akinfi. 791
Demidoff, Pavel. 791
Demidoff, Nicolai 791
Demidoff, Anatoli. 792
Demiurge. See Gnostics.
Demme, Hermann Christoph Gottfried 792
Demme, Charles Rudolph. 792
Demme, Wilhelm Ludwig. 792
Demme, Hermann. 792
Demme, Karl Hermann. 792
Demmin 792
Demmit co. 792
Democedes. 792
Democritus. 793
Demoivre, Abraham. See Moivre.
Demonology. 793
De Morgan, Augustus. 796
Demos. 797
Demosthenes (two). 797
Demotica. 800

SUPPLEMENT TO VOLUME V.

Cole, Vicat. 801
Collyer, Robert. 801
Colorado 801
Color-hearing. 806
Colvin, Sydney 806
Combs, Leslie 806
Comets 806
Conkling, Roscoe. 810
Connecticut 810
Cook, Dutton. 811
Cook, Joseph 811
Corea. 811
Corot, Jean Baptiste Camille. 816
Cranbrook, Gathorne Hardy. 816
Cremation. 816
Croquet. 818
Cushing, William B. 820
Custer, George Armstrong. 820
Dakota. 821
D'Albertis, Luigi M. 822
Darby, John Nelson. 822
Dark Days. 822
Daubigny, Charles François. 825
Davenport, Edward Loomis. 825
Davenport, Fanny Vining. 825
Davenport, Fanny Lily Gipsy. 825
Davenport, Blanche. 825
Davenport, Lily. 825
Davenport, May. 826
Davenport, Edgar Longfellow. 826
Davenport, Henry George Bryant. 826
Davis, Rebecca Harding. 826
Death Valley. 826
Décalcomanie. 826
Defregger, Franz 827
De Haas, William Frederick. 827
De Haas, Maurice Frederick Hendrick. 827
Delaware. 827
De Long, George Washington. 828
De Mille, James. 828

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